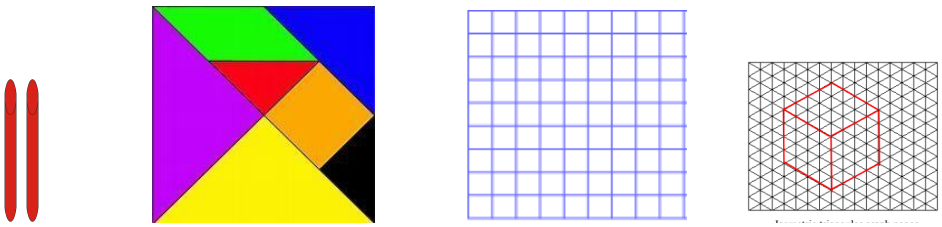
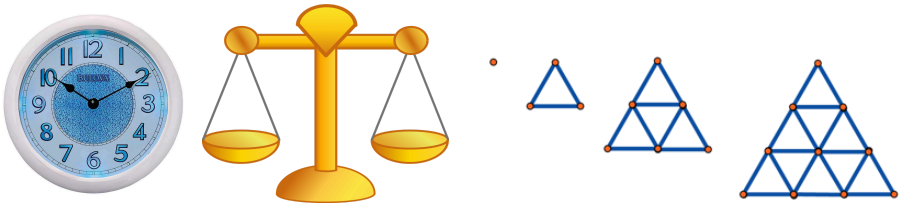
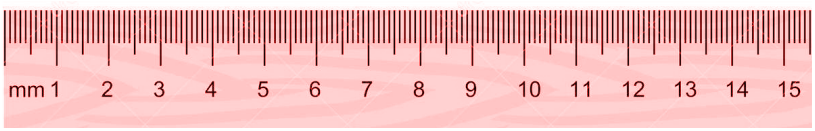
Let us Understand Mathematics-Class 3

$$24 \times 75 \quad 56 \div 8$$







Harinder Mahajan Ph.D
Research Scientist(Retired)
Delhi University

Preface

This is part of a series of books based on the NCERT syllabus and research on the teaching of mathematics for class 3. This is part of a revised series of books on mathematics for class 3 in India earlier published on www.vidyaonline.net. The focus here is on an understanding of concepts and procedures necessary for further learning and problem solving. The concepts are presented by videos, manipulatives, pictures, real-world situations, spoken and written words, and symbols. Exercises are provided for translation from one mode to another, reasoning, communication, and applications to real-life and problem solving. Automaticity (answering without thinking) of addition, multiplication, subtraction, and division facts are emphasized.

The teachers should provide more practice if necessary for mastery of number facts and procedures.

The schools that can afford should provide manipulatives such as counters, geometrical models, tangram pieces, blocks, geoboards, dot papers, balances, scissors.

In schools with a paucity of resources teachers and/or students can make models. Children can bring sticks, small boxes, pipes, scissors.

Exercises with manipulatives and oral work are included to facilitate the teacher's work.

Answers to selected exercises are provided.

Table of Contents

Unit 1-Numbers from 100-999	3
Unit 2-Addition	14
Unit 3-Subtraction	25
Unit 4-Geometry	35
Unit 5-Multiplication	46
Unit 6-Division	68
Unit 7-Money	74
Unit 8-Measurement	82
Unit 9-Time	90
Unit 10-Collection, Organisation, and Display of Data	98
Unit11- Patterns	103
Answers to Selected Exercises	108
Activity Sheets	114
Appendices	128

UNIT 1

Numbers from 100-999

We had learned numbers 0-99 and that we need a new name as numbers increase by one and how to write numbers in expanded form.
In this class, we will learn numbers from 100-999.
We know, 99 = 9 tens + 9 ones.
The next number would be 1 more. We now have ten ones which are equal to one ten, this and 9 tens make 10 tens. As our number system is based on ten, when we have ten of a group, we give it a new name and a place to write it. Ten tens are named as one **hundred**. We write it in a place to the left of tens and name it **hundreds place**.
As a number one more than 99 has 1 hundred, 0 tens, and 0 one, we write it as 100.
The next number would be one more and would have 1 hundred, 0 tens, and 1 one and we write it as 101 and read it as one hundred one.
We can write numbers till 109 by increasing by 1 the number in the ones place and reading it as one hundred followed by the number in the ones place.
The next number would have 10 ones which is the same as 1 ten, therefore we write it as 110 with 1 in hundreds and tens place and 0 in ones place, and read it as one hundred and ten.

Numbers from 100-199

The numbers from 100-199 may be written in order as in the table given below. The numbers beyond 110 up to 199 are read as one hundred followed by the two-digit number. For example, 172, 123, 189 are read as one hundred seventy-two, one hundred twenty-three, and one hundred eighty-nine respectively.

100	101	102	103	104	105	106	107	108	109
110	111	112	113	114	115	116	117	118	119
120	121	122	123	124	125	126	127	128	129
130	131	132	133	134	135	136	137	138	139
140	141	142	143	144	145	146	147	148	149
150	151	152	153	154	155	156	157	158	159
160	161	162	163	164	165	166	167	168	169
170	171	172	173	174	175	176	177	178	179
180	181	182	183	184	185	186	187	188	189
190	191	192	193	194	195	196	197	198	199

Read the numbers from 100-199 by reading this table. Start reading numbers in the first row from left to right beginning from 100, then the numbers in the next row from left to right, and so on.
How are the numbers changing from one cell to the next in the same row?
How are the numbers changing from one cell to the next in the same column?
What digit is in hundreds place in all these numbers?

Numbers from 200- 299

199 = 1 hundred + 9 tens + 9 ones
The next number would be 1 more than 199. We now have ten ones which we rename as one ten, this and 9 tens make ten tens which we rename as one hundred that together with one hundred makes two hundred we write it as 200.
The numbers from 200 - 299 can be written like numbers from 100 - 199 by writing 2 in hundreds place instead of one. These are read as two hundred followed by the name of two-digit number. A table giving numbers from 200 - 299 is given below:

200	201	202	203	204	205	206	207	208	209
210	211	212	213	214	215	216	217	218	219
220	221	222	223	224	225	226	227	228	229
230	231	232	233	234	235	236	237	238	239
240	241	242	243	244	245	246	247	248	249
250	251	252	253	254	255	256	257	258	259
260	261	262	263	264	265	266	267	268	269
270	271	272	273	274	275	276	277	278	279
280	281	282	283	284	285	286	287	288	289
290	291	292	293	294	295	229	297	298	299

Read the numbers 200-299 by reading numbers in the first row from left to right beginning from 200, then the numbers in the next row from left to right, and so on.

How are the numbers changing from one cell to the next in the same row?

How are the numbers changing from one cell to the next in the same column?

What digit is in hundreds place in all these numbers?

Numbers from 300- 399

After 299, the next number would be 1 more than 299. We now have ten ones which we rename as one ten, this and 9 tens make ten tens which we rename as one hundred that together with two hundred makes three hundred, we write it as 300. We can write numbers 300-399 as in the table from 200-299, replacing the digit in hundreds place with 3.

We can similarly write numbers from 400-499, 500-599, 600-699, 700-799, 800-899, and 900-999.

One more than 999 would give us 10 ones, which we rename as one ten that along with 9 tens gives 10 tens which we rename as one hundred; we now have 10 hundreds and need a new name and place to write it. Ten hundred are renamed as one **thousand**. It is written to the left of hundreds place and is called the **thousands** place.

As we have one thousand and 0 hundreds, 0 tens, and 0 ones, we write it as 1000.

Writing numbers in words

We write the numbers in words as we read them.

For example, we write the numbers as follows:

64-Sixty-four

100-One hundred

259-Two hundred fifty-nine

1000-One thousand

To be able to write numbers from 1-1000 in words, we need to learn the spelling of the following words to write in words numbers 1-1000.

1-One
2-Two
3-Three
4-Four
5-Five
6-Six
7-Seven
8-Eight
9-Nine
10-Ten
11-Eleven
12-Twelve
13-Thirteen
14-Fourteen
15-Fifteen
16-Sixteen
17-Seventeen
18-Eighteen
19-Nineteen
20-Twenty
30-Thirty
40-Forty
50-Fifty
60-Sixty
70-Seventy
80-Eighty
90-Ninety
100-Hundred
1000-Thousand

Exercise 1.1

1. Count by 10 from 100 to 190 from the 100 - 199 table.
2. Count by 10 six numbers beginning from 235 from the 200-299 table.
3. Read the following numbers:
   216, 356, 660, 874, 183, 355, 549, 771, 86, 706, 199, 800, 336, 868, 992, 525, 112, 258, 432, 909.
4. Write the following numbers (to be dictated by the teacher):
   464, 708, 347, 215, 838, 179, 206, 559, 641, 982, 393, 164, 404, 938, 502, 276, 785, 597, 430, and 700.
5. Write the following numbers in words:
   (a) 30
   (b) 50
   (c) 100
   (d) 1000
6. Write the following numbers in figures:
   (a) Three hundred eighty-one
   (b) Six hundred thirteen
   (c) Four hundred seventy-three
   (d) Two hundred fifty-six
   (e) Nine hundred twenty-four
   (f) One hundred five
   (g) Eight hundred sixty-seven
   (h) Seven hundred ninety-two
   (i) Five hundred
   (j) One hundred seventeen
   (k) Seven hundred eight
7. Write the following numbers in words:
   (a) 43

(b) 100

(c) 467

(d) 504

(e) 259

(f) 708

8. Write 3 numbers that come just after the following numbers

(a) 247

(b) 389

(c) 704

(d) 399

9. Write 3 numbers that come just before the following numbers

(a) 456

(b) 871

(c) 608

(d) 900

10. Write a number that comes between the following numbers

(a) 457 and 459

(b) 269 and 271

(c) 320 and 322

(d) 299 and 301

Place values in three-digit numbers

In a three-digit number, the first digit on the right is in ones place, the digit on its left is in tens place and the digit to the left of the tens place is in the hundreds place.

Place values of these are as many ones, tens, or hundreds as the digit in that place. For example, in 458, 8 is in the ones place and its place value is 8, 5 is in the tens place and its place value is 5 tens or 50 and 8 is in the hundreds place and its place value is 8 hundreds or 800.

The expanded form of numbers

We can write three-digit number in expanded form as follows:

743 = 7 hundreds + 4 tens + 3 ones = 700 + 40 + 3.

872 = 8 hundreds + 7 tens + 2 ones =800 + 70 + 2.

260 = 2 hundreds + 6 tens + 0 ones = 200 + 60 + 0.

Exercise 1.2

1. Write the numbers given below in the standard form.
   (a) 5 hundreds + 6 tens + 4 ones = 500 + 60 + 4 = 564
   (b) 6 hundreds + 4 tens + 7 ones
   (c) 3 hundreds + 8 tens + 2 ones
   (d) 4 hundreds + 5 tens
   (e) 8 hundreds + 9 tens + 6 ones
   (f) 7 hundreds
2. Write the following numbers in expanded form:
   (a) 432 = 4 hundreds + 3 tens + 2 ones = 400 +30 +2
   (b) 627
   (c) 840
   (d) 308
   (e) 999
3. How many one rupee notes can you get for one ten-rupee note?
4. How many ten-rupee notes can you get for one hundred rupee note?
5. If a person has the following number of hundred rupees notes, ten rupees notes, and one rupee notes in his wallet, how much money does he have?
   (a) 3 hundred rupee notes, 4 ten-rupee notes, and 5 one rupee notes = Rs.(300 + 40 + 5) = Rs. 345
   (b) 5 hundred rupee notes, 2 ten-rupee notes, and 6 one rupee notes
   (c) 6 hundred rupee notes
   (d) 8 hundred rupee notes and 5 ten-rupee notes
   (e) 3 hundred rupee notes, 4 ten-rupee notes, and 9 one rupee notes
   (f) 1 hundred rupee note and 6 one rupee notes
   (g) 5 hundred rupee notes, and 2 one rupee note
6. Write the place of the underlined digit (hundreds, tens, or ones)
   (a) 24<u>5</u>____ones place
   (b) 3<u>4</u>7
   (c) <u>1</u>64
   (d) 3<u>8</u>7

(e) 708

(f) 500

7. Find the place value of the digits coloured red in the numbers given below:

   (a) 256 5 tens or 50.

   (b) 647

   (c) 108

   (d) 530

   (e) 800

   (f) 609

8. Write the largest 3-digit number.
9. Write the smallest 3-digit number.
10. Write the largest number with the following digits using each digit once only.

    (a) 7 and 2

    (b) 5, 1, and 9

    (c) 6, 2, and 3

    (d) 4, 7, and 0

11. Write the smallest number with the following digits using each digit once only.

    (a) 6 and 8

    (b) 3, 2, and 9

    (c) 6, 4, and 7

    (d) 5, 7, and 2

12. Use the following sets of digits to write all the numbers you can by using each digit once only.

    (a) 4 and 8

    (b) 3 and 6

    (c) 2, 5, and 7

Comparison of numbers from 0-999

The digits in different places have different values.
The first digit on the right is in ones place has the value 1 and its value is the same as the digit.
The digit on its left is in the tens place and has the value 10 and we count by 10 as many tens as the digit to find its value.
The digit on the left of the tens place is in the hundreds place has the value 100 and we count by 100 as many numbers as the digit to find its value.
The number is equal to the sum of all these values.
We can compare numbers by either remembering the number that came earlier in counting is less than the number that came later in counting.
We can also compare numbers by looking at the digits.
If the number of digits is different in the two numbers, the number with a larger number of digits is greater than the one that has fewer digits, for example, 234 > 87, 45 > 9.
If the two numbers have the same number of digits, we first look at the digit in hundreds place in the two numbers. If these are different then the number in which the digit in hundreds place is larger is greater than the number in which a digit in hundreds place is smaller.
For example, 456 > 278, 835 > 635.
If the digit in the hundreds place is the same in both the numbers, then we compare the digits in the tens place. If these are different, the number in which the digit in tens place is larger is greater than the number in which the digit in tens place is smaller.
For example, 247 > 228, 478 > 459.
If the digit in the hundreds place, as well as tens place, is the same in both the numbers. Then we compare the digits in one's place. If these are different, the number in which the digit in the ones place is larger is greater than the number in which the digit in ones place is smaller. For example, 783 > 782, 947 > 941.
If the digit in the hundreds place, tens place as well as ones place is the same in both the numbers, then the two numbers are equal.
For example, 658 = 658, 795 = 795.

Exercise 1.3

Compare the following numbers by writing < , >, or = between the following numbers:

1. 345 < 461
   (a) 126 ___ 387
   (b) 357 ___ 99
   (c) 100 ___ 241
   (d) 265 ___ 736
   (e) 476 ___ 459
   (f) 609___ 620
   (g) 457___ 459
   (h) 840 ___ 849
   (i) 754 ___ 754
2. Arrange the following numbers from smallest to largest.
   (a) 178, 456, 283
   (b) 485, 372, 416
   (c) 549, 678, 329
   (d) 280, 239, 7
   (e) 451, 49, 337
3. Arrange the following numbers from largest to smallest.
   (a) 154, 785, 382
   (b) 467, 756, 800
   (c) 68, 390, 8
   (d) 8, 600, 458
   (e) 28, 90, 400

UNIT 2

Addition

By now, you should be able to add two one-digit numbers without thinking. Do the mastery test given in Appendix 3 and check if you can do all of them without thinking. For the facts, you could not, mark an X under them, and memorize them.

Addition of three-digit numbers that do not require renaming

Adding three-digit numbers is similar to adding two-digit numbers except for expressing numbers as hundreds, tens, and ones and an additional step of adding hundreds to hundreds.

Use of expanded form

We can add 3-digit numbers by expressing numbers in hundreds, tens, and ones and adding the hundreds tens and ones.

```
  132 = 1 hundred  + 3 Tens + 2 Ones
  434 = 4 hundreds + 3 Tens + 4 Ones
+ 213 = 2 hundreds + 1 Ten  + 3 Ones
-----------------------------------------------
        = 7 hundreds + 7 Tens + 9 Ones = 779.
-----------------------------------------------
```

Use of short form

Write H, T, O at the top to denote the places for hundreds, tens, and ones respectively. Write the numbers in different rows aligning hundreds with H, tens with T, and the ones with O for all the numbers. Add the ones, tens, and hundreds and write below the line.

```
  H T O
  1 3 5
  5 2 4
+ 1 2 0
---------
  7 7 9
---------
```

Addition of numbers that have different number of digits

We can add numbers with different digits by

1. **Counting forward**

To add a one-digit number to a three-digit number count forward as many numbers as the one-digit number. The last number gives the sum.
For example, to add 3 to 254 count forward 3 numbers from 254-255, 256 and 257, as the last number is 257, 254 + 3 = 257.
To add a two-digit and a three-digit number, count forward from the three-digit as many numbers as the ones in it, then count forward by 10 as many tens as the digit in the tens place. The last number gives the sum.
For example, to add 34 to 245, count forward 4 numbers-246, 247, 248, and 249. Then count forward 3 numbers by 10-259, 269, 279. As the last number is 279, 245 + 34 =279.

2. **Short-form**
   Write the numbers in expanded form, writing 0 in hundreds place for two-digit numbers and 0 in hundreds as well tens for one-digit numbers and adding ones to the ones, tens to tens, and hundreds to hundreds. For example,
   254 = 2 hundreds + 5 tens + 4 ones
   + 3 = 0 hundreds + 0 tens + 3 ones

   = 2 hundreds + 5 tens + 7 ones = 257

You may also use the short form. Write the numbers in a column aligning the ones with ones, and tens if any with tens. Then add ones to ones and tens to tens.

Example 1

```
 H T O
  2 4 5
+   3 4
---------
  2 7 9
---------
```

Exercise 2.1

Add the numbers given below mentally and explain how you got the answer.

1. 20 + 40
2. 30 + 50
3. 20 + 50
4. 43 + 5
5. 23 + 34
6. 42 + 23
7. 200 + 300
8. 500 + 300
9. 600 + 25
10. 800 + 50
11. 350 + 40
12. 700 + 70 + 7
13. 300 + 27
14. 524 + 5
15. 420 + 47
16. Fill in the blanks
    (a) 5 + _____ = 10
    (b) 50 + _____ = 80
    (c) 7 + _____ = 7

Exercise 2.2

Add the following numbers by first writing the numbers in expanded form and adding the ones to ones, tens to tens, and hundreds to hundreds.

1. 412 = 4 Hundreds 1 Ten + 2 Ones
   +354 = 3 Hundreds 5 Tens + 4 Ones

   = 7 Hundreds 6 Tens + 6 Ones = 766
   ---

2. 735
   +240

3. 346
   +623

4. 263
   +325

5. 245
   53
   + 301

6. 560
   +40

7. 576
   +20

8. 641
   +257

Exercise 2.3

Add

1. H T O
   2 2 3
   +4 2 5

   ----

2. H T O
   1 5 2
   +2 4 6

   ----

3. H T O
   3 1 5
   +4 3 2

   ----

4. H T O
   3 0 0
   +2 0 9

   ----

5. H T O
   5 3 2
   2 2 4
   +1 2 3

   ----

6. H T O
   4 7 1
   1 0 2
   +2 2 6

   ----

7. H T O
   6 6 5
   +2 3 4

   ----

8. H T O
   7 5 4
   +1 2 3

   ----

9. H T O
   8 5 4
   +1 4 2

   ----

10. H T O
    6 6 4
    +1 2 5

    ----

11. H T O
    3 2 2
    4 0 2
    +1 6 2

    ----

12. H T O
    4 6 1
    7
    + 1 1

    ----

13. H T O
    4 0 7
    1 4 1
    +2 4 8

    ----

14. H T O
    7 4 6
    + 5 2

    ----

15. H T O
    4 5 6
    +3 4 2

    ----

16. H T O
    1 2 5
    5 5 4
    +2 1 0

    ----

17. H T O
    6 2 7
    3 4 0
    + 2 2

Addition of three-digit numbers that require renaming/regrouping

Use of Expanded form of numbers

Express the numbers in expanded form and draw a line below them.
Add the ones, tens, and hundreds.
If the number of ones is 10 or more, rename the ones as tens and ones. Add the tens to tens.
If the number of tens now is 10 or more, rename tens as hundreds and tens and add the hundreds to hundreds. Write the number.

Example 2

245 = 2 hundreds + 4 tens + 5 ones
478 = 4 hundreds + 7 tens + 8 ones
+134 = 1 hundreds + 3 tens + 4 ones

= 7 hundreds + 14 tens + 17 ones.
= 7 hundreds + 14 tens + 1 ten + 7 ones.
= 7 hundreds + 15 tens + 7 ones.
= 7 hundreds + 1 hundred + 5 tens + 7 ones.
= 8 hundreds + 5 tens + 7 ones.
= 857.

2. **Use of short form**

Write the numbers so that the ones place, the tens place, and the hundreds place of all the numbers are aligned and draw a line below them.
Add the ones.
If the number of ones is 10 or more, rename these to tens and ones. Write ones in ones place below the line and tens in the tens place above the numbers to remind you that these are to be added while adding the tens.
Add the tens, if the number of tens is 10 or more, rename tens as hundreds and tens and write the tens in tens place below the line and hundreds in hundreds place above the numbers.
Add the hundreds and write in the hundreds place below the line.

Example 3

```
  H T O
  1 1
  2 4 5
  1 5 2
+4 7 8
  8 7 5
```

Add the ones first, we get 15.

Rename 15 as one ten and 5 ones; write 5 in ones place below the line and ten above the numbers in tens place to remind us another ten is to be added while adding the tens.

Add the tens, we get 17 tens.

Rename it as 1 hundred and 7 tens, write 7 in tens place below the line and 1 above the numbers in hundreds place to remind us another hundred is to be added while adding the hundreds

Add the hundreds which gives 8, therefore the sum is 875.

For adding numbers with different digits remember to write zero in hundreds and/or tens while using the expanded form and aligning the numbers on the right while using the short form.

Exercise 2.4

1. Fill in the blanks:
   (a) 16 ones = 1 ten + 6 ones.
   (b) 10 ones = ___ ten + ___ ones.
   (c) 23 tens = ___hundreds + ___ tens.
   (d) 16 tens = ___hundred + ___ tens
   (e) 10 tens = ___hundred + ___ tens + ___ ones
   (f) 6 ones = ___hundred + ___ tens + ___ ones
2. (a) Add the following numbers by first writing the numbers in expanded form and adding the ones, tens, and hundreds:

   418 = 4 hundreds + 1 ten + 8 ones
   +354 = 3 hundreds + 5 tens + 4 ones

   = 7 hundreds + 6 tens + 12 ones
   = 7 hundreds + 6 tens + 1ten + 2 ones
   = 7 hundreds + 7 tens + 2 ones
   = 772

   (b) 585
   +240

   (c) 346
   +623

   (d) 263
   325
   + 146

(e) 245
53
+527

(f) 345
63
+437

(g) 313
253
+327

(h) 45
325
+571

(i) 73
624
+ 27

Exercise 2.5

Add

H T O

1. 3 4 8
   +4 2 5

   ----

2. 2 5 7
   +5 4 6

   ----

3. 3 6 5
   +4 3 8

   ----

4. 3 0 0
   2 0 9
   +2 5 6

   ----

5. 4 5 0
   +3 4 0

   ----

6. 5 4 7
   + 7 6

H T O

7. 6 6 5
   +2 3 8

   ----

8. 7 5 4
   +1 2 9

   ----

9. 7 5 8
   +1 4 2

   ----

10. 4 6 4
    1 2 5
    +1 3 2

    ----

11. 6 3 5
    + 8

    ----

12. 8 9 2
    + 0

H T O

13. 3 0 9
    1 0 6
    +4 9 1

    ----

14. 5 5 2
    4 6
    1 7 5

    ----

15. 6 5 5
    2 3 8
    + 5 8

    ----

16. 6 6 5
    +2 3 8

    ----

17. 2 4 7
    3 8 9

Exercise 2.6

1. A team made 234 runs in the first inning and 439 runs in the second innings in a cricket match. How many runs did it make in all?
2. There were 240 men, 227 women, and 134 children in a cinema hall. How many people were there in the cinema hall?
3. 674 children were watching a match, 43 children from another school came and joined them. How many children are watching the match now?
4. Anirudh got 70 marks in mathematics, 62 in Hindi, and 46 in environmental studies. How many total marks did he get in all these subjects?
5. Preeti bought a dress for Rs. 125 and shoes for Rs. 240. How much did she spend?
6. Mohammad had Rs. 500 in a bank, he deposited Rs. 100 more. How much money does he have in the bank now?
7. Mary bought a dress for Rs 350 and a tee shirt for Rs. 150. How much did she spend in all?
8. John had 45 goats, he bought 8 more goats, How many goats does he have now?
9. Kohli made 58 runs in the first innings of a cricket match and 102 in the second inning. How many runs did he make in all?
10. Sharma has made 95 runs. How many more does he need to make a century?

UNIT 3

Subtraction

By now, you should be able to find subtraction facts without thinking. Check it by doing the Mastery test on subtraction given in Appendix 4. If you cannot answer any of these immediately, mark an X under those, and memorize them.

Subtraction of three-digit numbers that do not require renaming

Subtraction of three-digit numbers is similar to subtraction of two-digit numbers except for expressing numbers as hundreds, tens, and ones and an additional step of subtracting hundreds from hundreds.
We can subtract numbers by either using the expanded form or short form.

Expanded form

We express the numbers in expanded form and subtract the ones from ones, tens from tens, and hundreds from hundreds

558 = 5 hundreds + 5 tens + 8 ones
- 235 = 2 hundreds + 3 tens + 5 ones

= 3 hundreds + 2 tens + 3 ones = 323

Short-form

2. Write H for Hundreds, T for Tens, and O for Ones. Write the number from which a number is to be subtracted and the number to be subtracted under it, aligning the digits in hundreds, tens, and ones place. Subtract the ones from ones, tens from tens, and hundreds from hundreds.

```
  H T O
  5 5 8
- 2 3 5
-------
  3 2 3
```

Subtraction of numbers that have different number of digits

Write the expanded form of the number writing 0 in hundreds for two-digit numbers and 0 as well as 0 for tens for one-digit numbers and subtract ones from the ones, tens from tens, and hundreds from hundreds. For example

267 = 2 hundreds + 6 tens + 7 ones
- 24 = 0 hundreds + 2 tens + 4 ones

= 2 hundreds + 4 tens + 3 one = 243.

You may also subtract a one-digit number from a three-digit number by counting back as many numbers as the one-digit number. For example, to subtract 3 from 254, count back 3 numbers-253, 252, and 251, as the last number is 251, therefore 254 – 3 = 251.

For a two-digit number, you may count back as many numbers as the one-digit number and then count back by 10 as many numbers as the digit in the tens place. For example, to subtract 24 from 267, count back 4 numbers – 266, 265, 264, 263 and then count back by 10 two numbers – 253, 243, as the last no is 243, therefore 267 – 24 = 243.

You may also use the short form, aligning the digits in tens and ones of the number to be subtracted under the tens and ones place of the number from which it is to be subtracted.

Example 1

```
  H T O
  2 6 7
-   2 4
---------
  2 4 3
---------
```

Exercise 3.1

Subtract the following by using expanded form

1. 47 - 32
2. 326 - 114
3. 583 - 263
4. 454 - 322
5. 794 - 724
6. 786 - 234
7. 649 -326
8. 755 - 55
9. 857 -243
10. 453 - 22

Exercise 3.2

Subtract:

H T O	H T O	H T O
1. 3 9	6. 4 5 5	11. 7 3 8
- 2 4	- 1 3	- 1 3
-------	--------	--------
-------	--------	--------
2. 5 8	7. 3 8 7	12. 8 5 5
- 1 4	- 2 3 4	- 3 3
-------	--------	--------
-------	--------	--------
3. 3 4 7	8. 8 5 7	13. 9 9 9
- 2 2 5	-3 2 5	-6 6 6
--------	--------	--------
--------	--------	--------
4. 2 7 6	9. 3 7 9	14. 3 1 7
- 2 0 3	-2 1 6	- 1 7
--------	--------	--------
--------	--------	--------
5. 3 4 8	10. 5 4 6	15. 6 8 9
- 5	-1 4 3	- 2 8
--------	--------	--------
--------	--------	--------

Subtraction of three-digit numbers that requires grouping/renaming

Expanded form

1. Express the numbers in expanded form.
2. If the number of ones to be subtracted is more than the number of ones in the number from which it is to be subtracted, borrow one ten, reduce tens by 1, and rename it as 10 ones. Add the 10 ones to ones and subtract the ones from ones.
3. Now, look at tens if the number of tens to be subtracted is more than the number of tens, borrow 1 from hundreds and reduce the number of hundreds by 1. Rename one hundred as 10 tens and add that to tens, and subtract tens from tens.
4. Subtract hundreds from hundreds.

For example to subtract 448 from 623

1. Express 623 and 448 in expanded form.
   623 = 6 hundreds + 2 tens + 3 ones
   448 = 4 hundreds + 4 tens + 8 ones
2. As we have to subtract 8 ones and there are only 3 ones, we rename 1 ten as ten ones and add that to 3 ones so that we have 13 ones and reduce the number of tens by 1 so that we have 1 ten.
   623= 6 hundreds + 1 tens + 13 ones
3. We now look at tens as 4 tens are to be subtracted and we have only 1 ten, we rename 1 hundred as 10 tens and reduce the number of hundreds by 1. Add 10 tens to the tens. so that we have 5 hundreds and 11 tens and 13 ones.
4. We can now subtract ones from ones and tens from tens and hundreds from hundreds

   623 = 5 hundreds + 11 tens + 13 ones
   - 448 = 4 hundreds + 4 tens + 8 ones

   = 1 hundred + 7 tens + 5 ones = 175

Short-form

1. Write the numbers aligning ones, tens, and hundreds of the two numbers.
2. If the number of ones to be subtracted is more than the number of ones in the number from which it is to be subtracted, borrow 1 ten and correct tens. Rename one ten as 10 ones and write 1 before ones and above it to remind us that we have 10 + number of ones. Then subtract the ones from ones and write it under ones place after drawing a line.
3. We next look at tens, if the number of tens to be subtracted is more than the number from which it is to be subtracted, borrow 1 hundred and correct the hundreds. Rename 1 hundred as 10 tens and add that to tens. and write 1 before tens place and above it to remember that there are 10 more tens in the tens place.
   Subtract tens from tens and write it in tens place below the line in the tens place.
4. Subtract the hundreds from hundreds and write it in hundreds place below the line in the hundreds place.

Example 2

Subtract 448 from 673

1. Write 673 and 448 below that aligning ones, tens, and hundreds places.

```
    61
  6~~7~~3
– 4 4 8
--------
  2 2 5
--------
```

2. As the number of ones to be subtracted is more than 3, we rename 1 ten as ten ones and correct the tens and ones after renaming and write 6 in the tens place and writing 1 before 3 to remind us that we now have 13 ones. Then subtract the ones from ones, which is 5, write it under the line in the ones place.
3. Next, subtract 4 tens from 6 tens which is equal to 2 tens, write it in the tens place below the line.
4. Then subtract 2 hundreds from 4 hundreds which is equal to 2 hundreds and write it in hundreds place below the line.

Example 2

Subtract 275 from 654

1. Write 275 below 654 aligning the ones, tens, and hundreds places.

```
  51
   4 1
  ~~6~~ ~~5~~ 4
– 2 7 5
 --------
  3 7 9
 --------
```

2. As the number of ones to be subtracted is more than 4, we rename 1 ten as ten ones and reduce the tens to 4 and increase ones to 14.
3. Then subtract 5 from 14 which gives 9, write it in the ones place below the line.
4. Next, we have to subtract 7 tens from 4 tens.
5. As the number of tens to be subtracted is more than 4, we rename 1 hundred as ten tens and reduce the hundreds to 5 and increase tens to 14.
6. Then subtract 7 tens from 14 tens which is equal to 7 and write it in the tens place below the line.
7. Then subtract 2 hundred from 5 hundred which is equal to 3 hundred and write it in hundreds place below the line.

Subtraction from hundreds

Subtract 367 from 700,

To subtract 367 from 700, we think of 700 as 70 tens = 69 tens + 1 ten
= 69 tens and 10 ones, which makes the subtraction easier.

```
  6 9 1
 ~~7 0~~ 0
- 3 6 7
-------
  3 3 3
-------
```

Exercise 3.3

1. Subtract the following mentally
   (a) 40 - 20
   (b) 57 - 30
   (c) 500 - 100
   (d) 800 - 300
   (e) 40 - 3
   (f) 248 - 100
   (g) 565 - 32

Subtract in Q 2- 16 by expressing the numbers in expanded form (as a sum of hundreds, tens, and ones):

2. 463 - 135
3. 853 - 676
4. 451 - 174
5. 667 - 289
6. 725 - 27
7. 450 - 274
8. 400 - 248
9. 600 - 57
10. 800 - 582
11. 734 - 478
12. 352 – 244
13. 526 – 239
14. 335 - 178
15. 400 - 250

Exercise 3.4

Subtract:

H T O	H T O	H T O
1. 3 9 2	6. 7 0 0	11. 4 5 5
- 2 4 8	- 1 6 4	- 2 6 3
---	---	---
---	---	---
2. 5 8 0	7. 8 5 5	12. 3 8 7
- 1 4 5	- 8 3	- 2 3 9
---	---	---
---	---	---
3. 4 7 3	8. 6 6 6	13. 8 5 7
- 2 2 7	- 6 6 6	- 0
---	---	---
---	---	---
4. 2 7 6	9. 1 7 0	14. 3 7 3
- 2 0 8	- 1 6 4	- 2 8 6
---	---	---
---	---	---
5. 3 4 8	10. 6 4 9	15. 5 0 0
-2 3 9	- 3 6 8	-1 7 7
---	---	---
---	---	---

Exercise 3.5

1. There are 815 children in a school. If there are 357 girls, how many boys are there?
2. There are 325 girls and 478 boys in a school. How many children are there in the school?
3. There are 347 girls and 432 boys in a school. Are there more girls or boys and how many more?
4. A fruit seller had 200 oranges. He sold some of those. Now he has 65 oranges. How many oranges did he sell?
5. A milk dairy had 117 cows. It bought some more cows and now it has 160 cows. How many cows did it buy?
6. Rajan had 75 rupees. Vinita has 100 rupees. How much more money does Vinita have than Rajan?
7. (a) Raj had 150 rupees. His father gave him 50 rupees. How much money does he have now?
   (b) If he bought a shirt for 125 rupees. How much money is left with him?
8. There were 43 passengers on the bus. At the next stop, 8 got down and 4 got in. How many passengers are there now?
9. Sushma weighed 36 kg. She lost 2 kg in June and 3 kg in July. How much did she weigh at the end of July?
10. Sanjana bought a doll for 65 rupees. If she gave a 100 rupee note to the shopkeeper, how much money should he return to her?

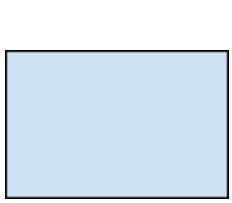
UNIT 4

Geometry

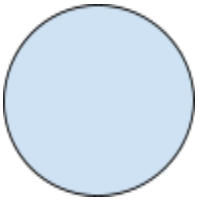
Two-Dimensional (2-D) Figures

Show the video: https://youtu.be/24Uv8Cl5hvI?t=25

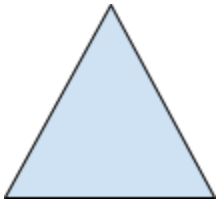
Some 2-D figures are given below:



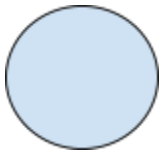
(a)



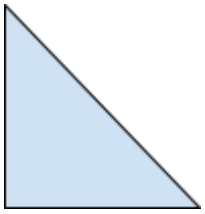
(b)



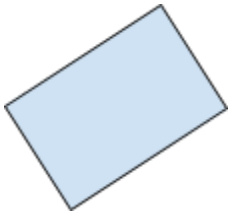
(c)



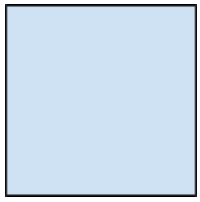
(e)



(f)

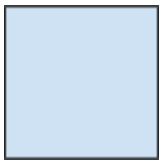


(g)



(h)

(i)



(j)

Which of these are squares?

How are they similar? (They all have four sides, four corners of the same shape, and all sides are equal.)

Which of these are rectangles?

How are they similar? (They all have four sides, four corners of the same shape, and opposite sides are equal.)

Triangles

Which of these are triangles?

How are they similar? (They all have three sides and three corners)

Activity 4.1

1. Cut triangles from Activity Sheet 4.1 and make other shapes by combining, folding, and/or cutting them.
2. Can you make a square with these?
3. Can you make a smaller triangle with these?
4. Can you make any other shape with these?
5. Glue the shapes you could make in your notebook and name them.

Activity 4.2

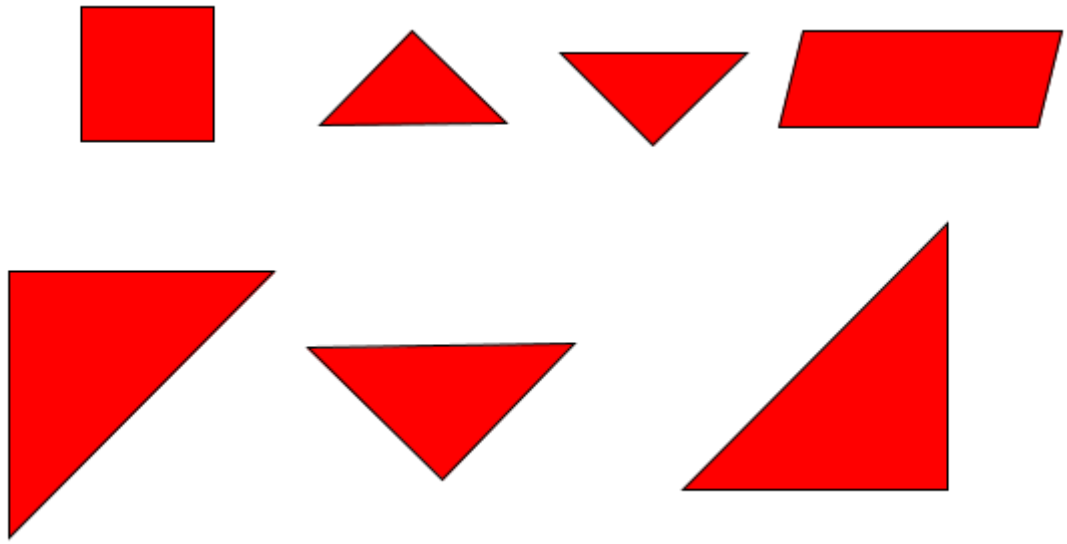
1. Cut squares from Activity Sheet 4.1
2. In how many ways you can cut it into two equal pieces.
3. How can you check if the two pieces are equal?
4. In how many ways you can cut it into four equal pieces.
5. Can you cut it into 4 equal squares? Describe how.
6. Can you cut it into 4 equal triangles? Describe how.
7. Can you cut it into 4 equal rectangles? Describe how.
8. What other shapes can you make by cutting/folding it.
9. Glue the shapes you could make in your notebook and name the shapes.

Activity 4.3

1. Cut rectangles from Activity Sheet 4.1
2. What other shapes can you make by cutting/folding the rectangles?
3. Name the shapes.
4. Glue the shapes you could make in your notebook.
5. How are a square and rectangle alike?
6. How are squares and rectangles different?
7. How are squares and triangles alike?
8. How are squares and triangles different?

Tangram

A **tangram** is an old Chinese puzzle and consists of seven tangram pieces.



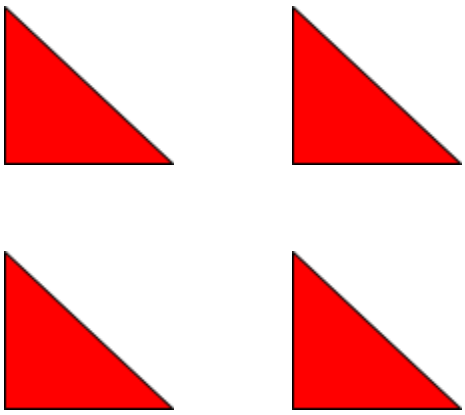
If you do not have a tangram, you can make these pieces by pasting the figure given in Activity Sheet 4.4 on cardboard, and cutting the pieces.

Name shapes of different pieces.

Flips, Slides, and Turns

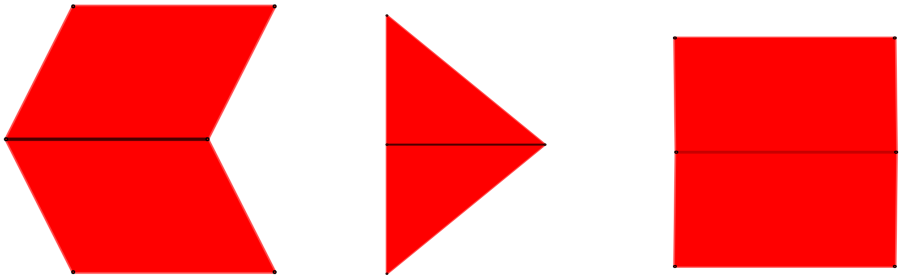
We can move a figure in many ways so that it does not change the size and shape of the figure.

A **slide** moves a figure without changing the way it looks. The figure given below shows three slides of the first triangle.



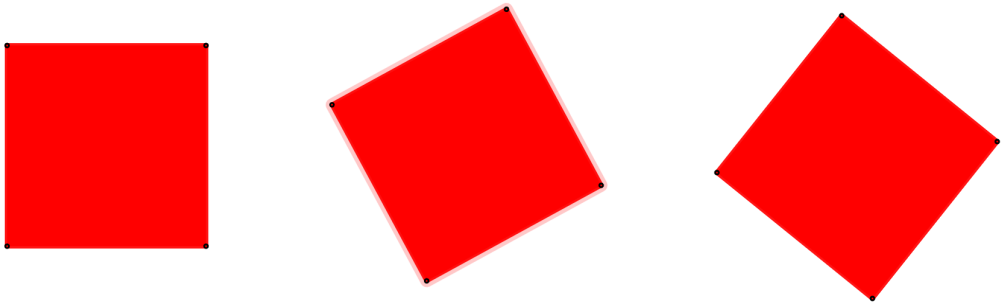
Slide different tangram pieces and trace them.

A **flip** produces a mirror image of a figure. It is also called a reflection. The figures given below show flips of different figures about one of the sides:



Trace and flip different tangram pieces along a side and trace around them.

A **turn** is rotating a figure about a point. The figure given below shows the turns of the first square.



Rotate different tangram pieces about a corner and trace them.

Activity 4.4

You can make many shapes with tangram pieces.

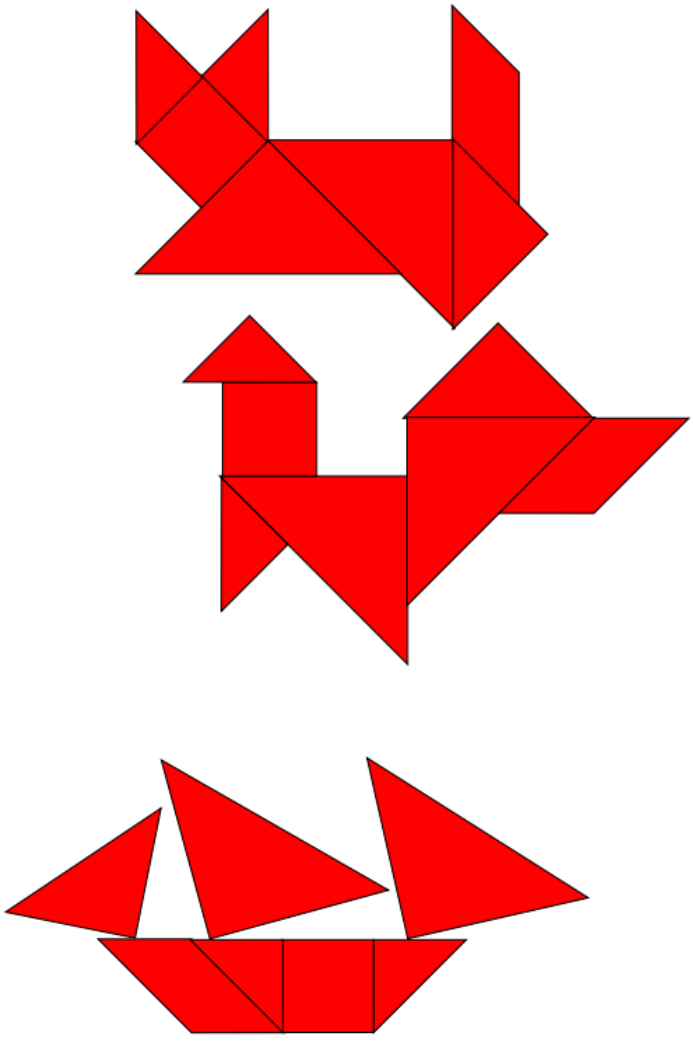
Make the following shapes by using tangram pieces, it may require sliding, flipping, and rotating some pieces, and trace them.

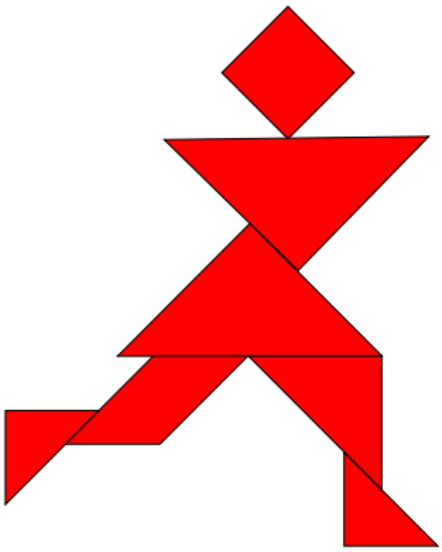
The students may work in small groups.

1. A square with two tangram pieces
2. A parallelogram with two tangram pieces
3. A square with three tangram pieces

4. A square with four tangram pieces
5. A square with five tangram pieces
6. A square with all the seven tangram pieces
7. A triangle with all the seven pieces
8. A rectangle with all the seven pieces
9. A parallelogram with all the seven pieces
10. Ask them where they used a flip, a turn, or a rotation.
11. Make the shapes given below:

Make shapes given below using all the seven pieces of a tangram:





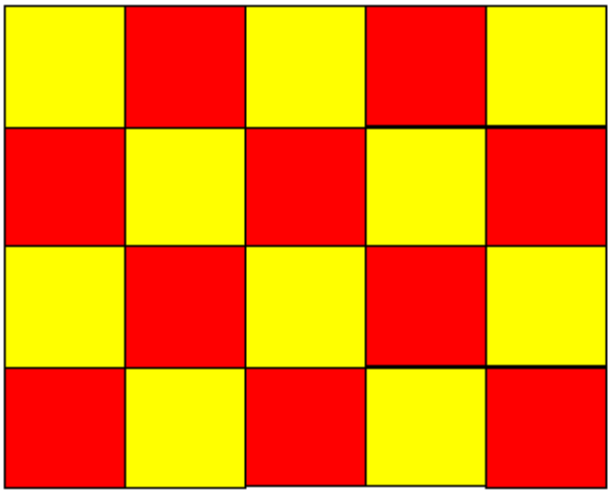
If you have access to a computer, you can find and copy many such figures. You can also download apps for making figures with tangrams free and make many shapes like these.

Tiling a region

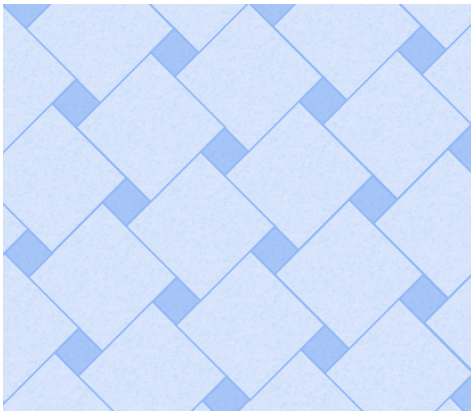
You would have seen many floors with tiles. What shapes had been used for those?

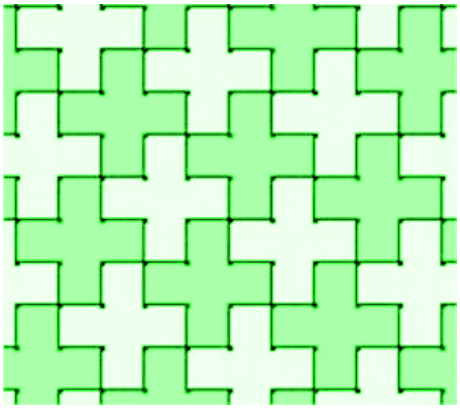
Tiling refers to filling a surface with shapes so that there are no overlaps or holes. It may not fill the corners.

We can tile a page by drawing around a square chip or tangram piece, sliding the square so that its edge is along the side of the square and drawing around it again, and continuing in this manner until the whole page is tiled. We may colour alternate squares yellow and red. The page would look like the figure given below.



Some other tiled regions are given below.





Activity 4.5

Tile a page by a parallelogram. Ask them whether they used a flip, a turn or a rotation, or more than one of these.

Repeat it with a rectangle.

Can you tile a page by triangle so that there are no gaps or overlaps? (rotate or flip the triangular piece). If yes, tile it; if no, why?

Can you tile a surface with circles? If yes, tile it; if no, why?

Can you tile a surface with ovals? If yes, tile it; if no, why?

Maps

Show the video: https://youtu.be/i_WnlS4J6U0

Maps are visual representations of places and help us to locate and go to different places.
Maps may be of a country, state, city, village, colony, places of tourist attraction, or going to different places in a city.
We will consider only simple maps that we need to go to nearby places.

Activity 4.6

Ask the students questions like the ones given below:
Give directions for coming to the classroom from the main gate.
Give directions for going to the principal's office, library from your classroom.
Give them a map of part of a village or a colony or garden or zoo children visited recently and ask them to find their way starting from a place to different places on the map.

Ask questions like
Give directions for going to a particular enclosure from the entrance.
Give directions for going from one enclosure to the other or the restaurant for refreshments or the toilet rooms.

Draw and use maps

Draw maps of a schoolyard including some landmarks. The students can then use landmarks to write directions for finding hidden objects at some places there.

3-D Objects

Activity 4.7

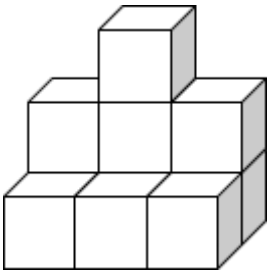
Building towers and structures with blocks

Ask them to bring from home three-dimensional objects such as empty boxes, cans, ice cream cups, funnels, etc., and build a tower with these.

(a) Record the height of the tower and objects used.

(b) Write a report on building with three-dimensional objects. Give information such as shapes that were best at the bottom and top of the tower, the best way to position boxes and cans, and the objects that would be best for large and low buildings.

The figure given below gives a structure made with blocks. Copy it.



Make Three Dimensional structures with blocks.

Make structures with a given number of blocks.

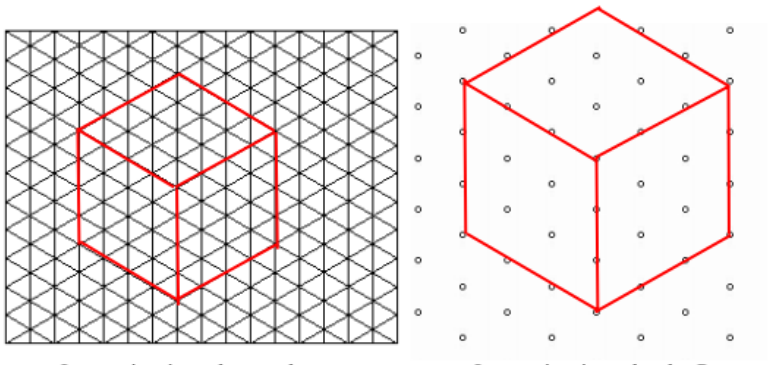
Copy structures made by others with blocks.

Draw 3-D objects in 2-D

Show the video: https://youtu.be/_XJ1A5io8vc

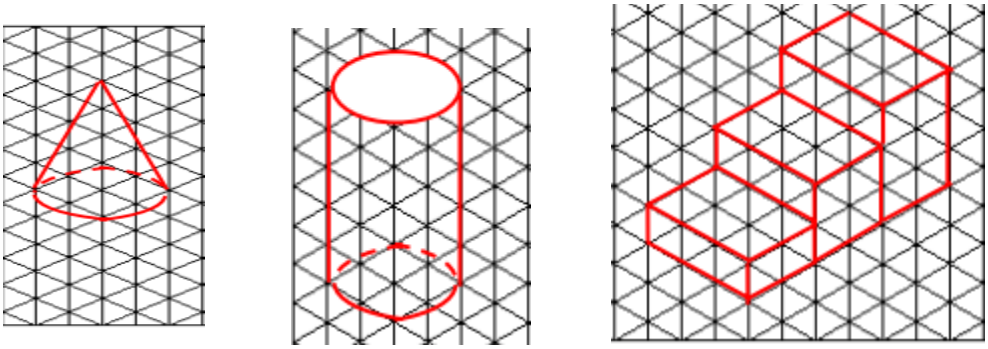
We can draw 3D objects by using an **isometric grid** or dot paper given in Activity sheets 4.3 and 4.4

The figure given below shows a cube drawn on them.



Examples of different geometric shapes drawn on isometric grids

Some shapes require lines that won't fall right on the grid and/or curved portions e.g. for a cylinder or cone. The dashed lines show the hidden faces.



Activity 4.8

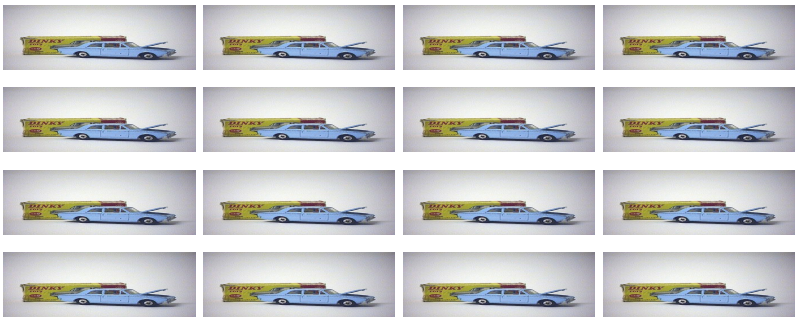
Draw a cuboid, a cone, and a cylinder of a size different than given in the book.

Make other shapes and copy the shapes made by others.

UNIT 5

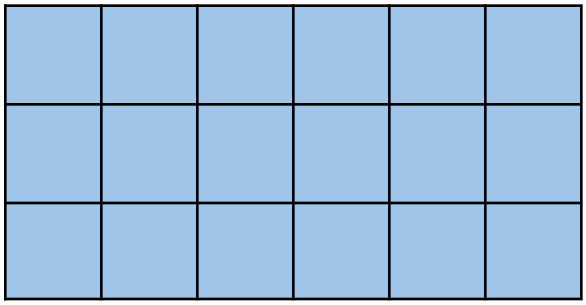
Multiplication

There are many situations in which we need to add the same number many times. For example, there are 4 toy cars in a row in a box and there are 4 rows of cars and we want to know how many cars there are in all.



There are 4 + 4 + 4 + 4 = 16 cars

A rectangular region is covered with square tiles so there are 6 tiles in each row and 3 in each column and we want to find out how many square tiles there are in all.



6 + 6 + 6 =18

Multiplication is a short way of expressing addition when a number is added to itself many times.

We express

2 + 2 + 2 + 2 + 2 = 10 by 5 × 2 = 10,

4 + 4 + 4 + 4 = 16 by 4 × 4 = 16

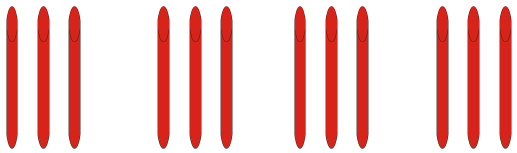
6 + 6 + 6 =18 by 3 × 6 = 18.

These are read as 5 times 2 = 10, 4 times 4 = 16 and 3 times 6 = 18.
The number that we get after multiplication is called the **product** of two numbers. For example, in 3 × 6 = 18, 18 is the product of 3 and 6.
The product of two one-digit numbers is called a **multiplication fact**.
The numbers 3 and 6 are called **factors** of 18.

Some aids for finding multiplication facts

Use of sticks

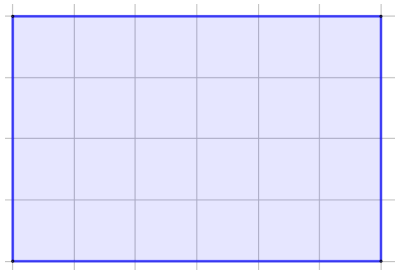
Set aside as many sticks or draw lines as one of the numbers and as many sets of these as the other number and count all of them. The count gives the product of two numbers. For example to find 4 × 3, set aside 4 sets of 3 sticks or draw 4 sets of 3 lines and count all of them. As the count is 12, therefore 4 × 3 = 12.



or ||| ||| ||| |||

Use of graph paper

A graph paper can be used to find the multiplication facts by shading rectangles whose sides are the two numbers whose product is to be found. Count all the squares. The total number of squares gives the product.
For example, to find 4 × 6, shade a rectangle whose sides are 4 and 6 squares and count the total number of shaded squares. It gives
4 × 6 = 24. Therefore 6 × 4 = 24.



Exercise 5.1

1. Write the following statements as a product of two numbers and find the product:
   (a) $2 + 2 + 2 + 2 = 4 \times 2 = 8$.
   (b) $3 + 3 + 3$
   (c) $5 + 5 + 5 + 5 + 5 + 5$
   (d) $8 + 8 + 8 + 8 + 8 + 8 + 8$
   (e) $1 + 1 + 1 + 1 + 1$
2. Read the following number facts:
   (a) $3 \times 7 = 21$.
   (b) $4 + 5 = 9$.
   (c) $6 \times 8 = 48$.
   (d) $14 – 7 = 7$.
   (e) $5 \times 5 = 25$.
   (f) $5 + 7 = 12$
   (g) $18 - 9 = 9$
3. If you made 3 sets of 2 sticks, how many sticks did you use? Express it as a multiplication fact.
4. If you have 3 sets of 3 sticks, how many sticks do you have? Express it as a multiplication fact.
5. If you have 2 sets of 4 sticks, how many sticks do you have? Express it as a multiplication fact.
6. How many sets of 2 would give you 8 sticks?
7. How many sets of 5 would give you 25 sticks?
8. Find the following products using graph paper in activity sheet 5.
   (a) 3×3
   (b) 4×4
   (c) 5×7
   (d) 8×8
   (e) 6×5

Learning multiplication facts

The product of two one-digit numbers is called a multiplication fact. Multiplication facts are very important for further learning and you should memorize them so that you can answer immediately without thinking. Learning properties of multiplication and the concept of place value enables us to multiply very large numbers that we need in daily life.

Multiplication by 10

We have already learnt that 2 tens = 20, 3 tens =30, 4 tens = 40 and so on. That is $1 \times 10 = 10$, $2 \times 10 = 20$, $3 \times 10 = 30$ and so on.

Multiplication Table of a number

The product of numbers from 1 to 10 with a one-digit number is called a Table of multiplication of that number. We can make it by repeatedly adding that number as many times as the other number e.g.

Table of 4

4	$1 \times 4 = 4$
4 + 4	$2 \times 4 = 8$
4 + 4 +4	$3 \times 4 = 12$
4 + 4 +4 + 4	$4 \times 4 = 16$
4 + 4 +4 + 4+ 4	$5 \times 4 = 20$
4 + 4 +4 + 4+ 4 + 4	$6 \times 4 = 24$
4 + 4 +4 + 4+ 4 + 4 + 4	$7 \times 4 = 28$
4 + 4 +4 + 4+ 4 + 4 + 4 + 4	$8 \times 4 = 32$
4 + 4 +4 + 4+ 4 + 4 + 4 + 4 + 4	$9 \times 4 = 36$
4 + 4 +4 + 4+ 4 + 4 + 4 + 4 + 4 + 4	$10 \times 4 = 40$

Use of a table of hundred

We can also use a table of hundred given in Appendix 1, to make a table of a number.

To make a table of 2, shade alternate numbers beginning with 2 up to 20.

To find the product of a number with 2, read as many shaded numbers as the other number. The last number gives the product of 2 with the number.

For example, to find 6×2, read 6 shaded numbers-2, 4, 6, 8, 10, and 12. As the last number is 12, $6 \times 2 = 12$.

Multiplication by zero

A bookshop gives 2 stickers to a child buying chocolate from it.

On Sunday 7 children bought chocolates. How many stickers did the store give to children?
The store gave 14 stickers, as $7 \times 2 = 14$.
On Monday no child bought chocolate. How many stickers did the store give to children?
The store did not give any that is the same as 0 stickers, therefore
$2 \times 0 = 0$.
This will hold if the store was giving a different number of stickers, say 5.
$5 \times 0 = 0$.
Any number multiplied by zero equals zero.

Exercise 5.2

1. (a) Write a table of 0.
   (b) What pattern do you notice in the product of any number with 0?
2. (a) Write a table of 1.
   (b) What pattern do you notice in the product of any number with 1?
3. (a) Write a table of 10 by skip counting by 10 from a hundred table.
   (b) What do you notice about the number in the ones place in the product?
4. (a) Write a table of 5 by skip counting by 5 from a hundred table.
   (b) What do you notice about the number in the ones place in the product?
5. Write a table of 2 by skip counting by 2 from a hundred table.
6. Write a table of 3 by skip counting by 3 from a hundred table.
7. Write a table of 4 by skip counting by 4 from a hundred table.

Use a multiplication table

Show the video: https://youtu.be/D6ajLh0isG8?t=22

It summarises all the tables in one table and is handy until you can recall multiplication facts from memory.

Multiplication Table

×	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
3	0	3	6	9	12	15	18	21	24	27
4	0	4	8	12	16	20	24	28	32	36
5	0	5	10	15	20	25	30	35	40	45
6	0	6	12	18	24	30	36	42	48	54
7	0	7	14	21	28	35	42	49	56	63
8	0	8	16	24	32	40	48	56	64	72
9	0	9	18	27	36	45	54	63	72	81

The first row and column give the row number and column number respectively.

Other rows give the product of the number at the beginning of the row with the number at the top of the column.

The row labeled 0 gives the product of different numbers and 0.

The row labeled 1 gives the product of different numbers and 1.

The row labeled 4 gives the product of different numbers and 4 and so on.

We can find a specific multiplication fact by highlighting a row labeled with one of the numbers and a column labeled with the other number. The number in the cell in which the highlighted row and column cross give the product of the two numbers.

For example, to find 8 × 4, we highlight the row labeled 8 and a column labeled 4. As the cell in which the highlighted row and column meet has 32 in it, the product of 8 and 4 is 32 or 8 × 4 = 32.

Properties of Multiplication

We have already learned that

The product of any number and zero is zero.

The product of any number and 1 is the number itself.

The product of any number and 10 is as many tens as the number.

Verify the following using any of the aids for multiplication:

$2 \times 3 = 3 \times 2$

$4 \times 5 = 5 \times 4$

$4 \times 1 = 1 \times 4$

$3 \times 4 = 4 \times 3$

The order of numbers in a multiplication does not matter.

This reduces the number of multiplication facts that we have to learn. We can use this property to find other multiplication facts from the ones that we know.

For example, if we know that $6 \times 2 = 12$, we can find out 2×6 which would also equal 12.

Thus, we only have to learn the facts coloured blue.

Show the video: https://youtu.be/v1Ih3-mDPUk

×	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
3	0	3	6	9	12	15	18	21	24	27
4	0	4	8	12	16	20	24	28	32	36
5	0	5	10	15	20	25	30	35	40	45
6	0	6	12	18	24	30	36	42	48	54
7	0	7	14	21	28	35	42	49	56	63
8	0	8	16	24	32	40	48	56	64	72
9	0	9	18	27	36	45	54	63	72	81

Exercise 5.3

Complete the tables of 6, 7, 8, and 9 from the Multiplication Table

Table of 6	**Table of 7**	**Table of 8**	**Table of 9**
1 × 6 = 6	1 × 7 = 7	1 × 8 = 8	1 × 9 = 9
2 × 6 =	2 × 7 =	2 × 8 =	2 × 9 =
3 × 6 =	3 × 7 =	3 × 8 =	3 × 9 =
4 × 6 =	4 × 7 =	4 × 8 =	4 × 9 =
5 × 6 =	5 × 7 =	5 × 8 =	5 × 9 =
6 × 6 =	6 × 7 =	6 × 8 =	6 × 9 =
7 × 6 =	7 × 7 =	7 × 8 =	7 × 9 =
8 × 6 =	8 × 7 =	8 × 8 =	8 × 9 =
9 × 6 =	9 × 7 =	9 × 8 =	9 × 9 =
10 × 6 =	10 × 7 =	10 × 8 =	10 × 9 =

Exercise 5.4

Multiply and check by using the multiplication table

1. 3
×2

---

2. 4
×3

---

3. 5
×2

---

4. 4
×3

---

5. 5
×4

---

6. 5
×5

---

7. 1
× 6

---

8. 2
× 7

---

9. 6
×5

---

10. 8
×1

---

11. 9
×2

---

12. 7
×3

---

13. 7
×2

---

14. 6
×4

---

15. 7
×8

---

16. 6
×6

---

17. 7
×8

---

18. 5
× 2

---

19. 5 × 0 ------ ------	3 × 8 ------ ------	5 × 3 ------ ------
20. 2 × 2 ------ ------	5 × 7 ------ ------	4 × 6 ------ ------
21. 3 × 3 ------ ------	2 × 9 ------ ------	7 × 2 ------ ------
22. 2 × 6 ------ ------	5 × 3 ------ ------	3 × 7 ------ ------
23. 3 × 5 ------ ------	3 × 4 ------ ------	5 × 6 ------ ------
2 × 5 ------ ------	4 × 4 ------ ------	7 ×7 ------ ------

Exercise 5.5

Make a Multiplication Table (You can print the blank table given in Appendix 7.)

1. What numbers will go in the first column?
2. What numbers will go in the top row?
3. Where would you put a multiplication sign?
4. In what row on the multiplication chart, you would write the products of 2 and another number?
4. Enter all the multiples of the numbers 0, 1, 2, and 5 into the table.
5. How can we show that 3×4 has the same product as 4×3?
6. Notice in all multiples of 9, the sum of the digits is 9 in all of these.
   The digit in tens place is 1 less than the number e.g. 2×9 has 1 in tens place, 7×9 has 6 in tens place.
   The digit in ones place is 9- number in tens place. For a multiple of 2, it is 9 - 1 = 8 and for a multiple of 7, it is 9-6 = 3.
   Thus $2\times 9 = 18$ and $7\times 9 = 63$.
   We can use these facts to find all multiples of 9.
   Find
   (a) 4×9
   (b) 8×9
   (c) 9×9
7. Memorize a few multiplication facts every day. After you have memorized a few multiplication facts, enter them into the multiplication table.
8. When you have memorized all the multiplication facts do the Mastery Test given in Appendix 6. You should be able to write these without thinking.

Multiplication of two-digit and three-digit numbers by a one-digit number

Multiplying ten by a one-digit number

We can multiply a number by 10 by counting by 10 as many numbers as the number. The last number gives the product. For example, to multiply 6 by 10, count 6 numbers by ten-10, 20, 30,40,50,60. As the last number is 60, 6 × 10 = 60 = 6 tens.

The product of any number and ten is as many tens as the number.

Multiplying a number of tens by a one-digit number

The product of a number of tens and a one-digit number is as many tens as the product of the number of tens and a one-digit number.

For example,

3 tens × 2 = 6 tens or 30 × 2 = 60.

4 tens × 5 = 20 tens or 40 × 5 = 200.

Multiplying hundreds by a one-digit number

We can multiply a number by 100 by counting by 100 as many numbers as the number. The last number gives the product. For example, to multiply 6 by 100, count 6 numbers by hundred-100, 200, 300, 400, 500, and 600. As the last number is 600, 6 × 100 = 6 hundred = 600.

Multiplication of a two-digit number with a one-digit number without renaming

We can multiply a two-digit number with a one-digit number by using the expanded form of numbers, partition model, or short form

Expanded form

We can multiply a two-digit number by a one-digit number by writing the two-digit number in expanded form and first multiplying the ones with the one-digit number and then the tens with the ten-digit number and adding the two.

For example, to multiply 33 by 3

Write 33 in expanded form.

Multiply the ones and tens by 3.

33 = 3 tens + 3 ones

_____ × 3

= 9 tens + 9 ones = 99.

Multiplication of a two-digit number with a one-digit number with renaming

We can multiply a two-digit number with a one-digit number by using the expanded form of numbers, partition model, or short form.

Expanded form

To multiply a two-digit number by a one-digit number

Write the two-digit number in expanded form.

Multiplying the ones with the one-digit number, the tens with the ten-digit number.

If the number of ones is ten or more, rename it as tens and ones and add the tens to tens.

If the number of tens now is ten or more, then rename them as hundreds and tens.

Then write the expanded form in standard form.

For example, to multiply 25 by 5

Write

25 = 2 tens + 5 ones

× 5

= 10 tens + 25 ones

= 10 tens + 2 tens + 5 ones

= 12 tens + 5 ones

= 1 hundred +2 tens + 5 ones

= 125

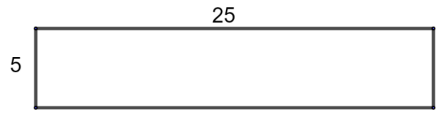
Partition model

We will explain it by an example

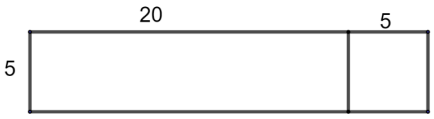
Example 1

Find 25 × 5

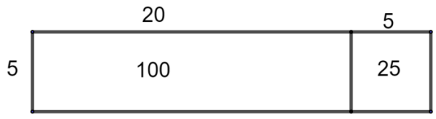
1. Draw a rectangle and label the sides with 25 and 5.
   These do not have to be exact or to the scale.



2. Partition the two-digit number into numbers that are easier to calculate. Split it into two numbers, one of which is the highest multiple of 10 with the multiplier less than the number. That is split 25 into 20 and 5.
   Draw a line in the rectangle to show the partition.



3. Multiply the number at the top of each column by the number on the side of the rectangle and write the product in the box.



4. Add the numbers in both boxes. This gives the product of two numbers.
   100 + 25 = 125
5. Therefore 25 × 5 = 125

Short form

Find 25 × 5

1. Write the numbers 25 and 5 below that in the next line aligning 5 with the ones place.
2. Draw a line below that.
3. Multiply 5 by 5 ones and write it below the line aligning ones with ones and tens with tens.
4. Multiply 2 tens by 5 ones and write the product in the next line aligning the ones with ones and tens with tens.
5. Add the numbers. It gives the product 25 × 5 = 125

$$\begin{array}{r} 25 \\ \times 5 \\ \hline 25 \\ 100 \\ \hline 125 \end{array} \qquad \begin{array}{l} \\ \\ 5 \times 5 \\ 20 \times 5 \\ \\ \end{array}$$

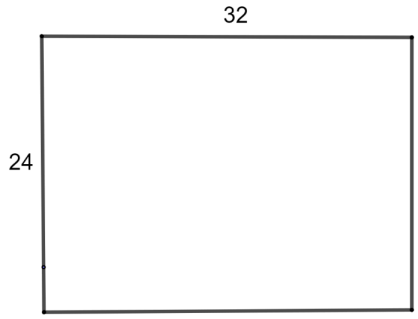
Show the video up to 3:33 minutes.
https://youtu.be/FJ5qLWP3Fqo?t=236
We can shorten it further by combining steps 2 and 3 in one step.

$$\begin{array}{r} {\scriptstyle 2} \\ 25 \\ \times 5 \\ \hline 125 \end{array}$$

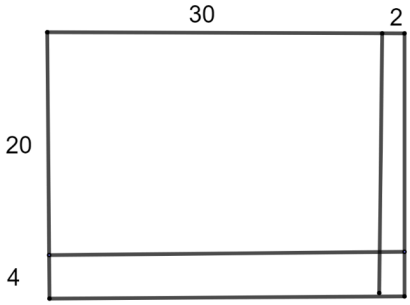
Multiplying ones that is 5 by 5, we get 25. Write 5 below the line and 2 above the tens to remind us that it has to be added after we multiply tens by 5.
Multiplying tens that is 2 by 5, we get 10. Adding 2 to that we get 12 tens or 1 hundred and 2 tens, write them below the line in tens and hundreds places.

Multiplication of a two-digit number with a two-digit number

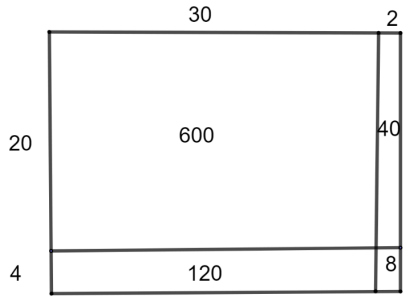
We can multiply a two-digit number by a two-digit number by using a partition model or short form.
Partition model
We will explain it by an example
Example 2
Find 32 × 54
Draw a rectangle and label the sides with 32 and 54.
These do not have to be exact or to the scale.



Partition the two-digit number into numbers that are easier to calculate. We split it into tens and ones. Let us split 32 into 30 and 2 and 24 into 20 and 4 Draw lines in the rectangle to show the partition.



Multiply the numbers at the top of each column by each of the numbers on the side of the rectangle and write the product in the boxes.



Add the numbers in all the boxes. This gives the product of two numbers.
Therefore = 600 + 120 + 40 + 8 = 768

Short form

Find 32 × 24
Write the numbers 32.
Write 24 below that in the next line aligning the tens and ones.
Draw a line below that.
Multiply 4 by 2 and write it below the line.
Multiply 4 by 3 tens and write the product in the next line aligning the ones with ones.
Multiply 2 tens by 2 and write the product in the next line
Multiply 2 tens by 3 tens and write the product in the next line aligning the ones with ones and tens with tens.
Add the numbers. It gives the product 32 × 24.

```
  32
× 24
--------
   8        4×2
 120        4×30
  40        20×2
 600        20×30
-------
 768
```

Show the video: https://youtu.be/RVYwunbpMHA?t=70

We can shorten it further

1. Multiply the number by ones
2. Multiply the number by tens
3. Add the two

Example 3

```
  1
  3
  45
× 36
------
 270          45 × 6
1350          45 × 30
-------
1620          270 + 1350
-------
```

Exercise 5.6

Multiply the following mentally

1. $4 \times 0 = 0$
2. 6×0
3. 7×0
4. $3 \times$ 3 tens
5. 5×6 tens
6. 7 tens $\times 3$
7. 4 hundreds $\times 2$
8. 3 hundreds $\times 3$
9. Express the following in hundreds and tens
   (a) 12 Tens = 1 hundred + 2 tens
   (b) 37 Tens
   (c) 56 Tens
10. Write the number in standard form
    (a) 4 Hundreds + 7 Tens + 3 Ones = 473
    (b) 2 Hundreds + 4 Tens + 2 Ones
    (c) 7 Hundreds + 6 Tens + 4 Ones

11. 22
    $\times$ 4

    ------

12. 45
    $\times$ 1

    ------

13. 60
    $\times$ 5

    ------

14. 17
    $\times$ 4

    ------

15. 23
    $\times$ 4

    ----

16. 24
    $\times$ 3

    ------

17. 56
×17

---

18. 37
×25

---

19. 64
×15

---

20. 43
× 23

---

21. 56
×16

---

22. 34
× 28

---

23. 26
×33

---

24. 47
×18

---

25. 25
×35

Exercise 5.7

1. Namita needs 4 beads to decorate a hairband. How many beads would she need for decorating 4 hairbands?
2. A notebook costs 3 rupees. How much money do you need for buying 6 notebooks?
3. There are 10 pencils in a box. How many pencils would be there in 6 boxes?
4. A week has 7 days, how many days are there in 24 weeks?
5. A packet of candles contains 20 candles. Raj bought 5 packets, how many candles did he have?
6. An egg tray holds 12 eggs. How many eggs would 6 trays hold?
7. A school hall has 145 benches. If 6 students can sit on a bench. How many students can be seated in the hall?
8. A carpenter needs 4 legs to make a chair. If he has an order from a school for 124 chairs. How many legs would he need?
9. Rajan bought 4 notebooks each costing 3 rupees and a pencil box costing 15 rupees. How much money he should pay to the shopkeeper.
10. Arti bought 3 pens each costing 6 rupees. If she paid a 20-rupee note to the shopkeeper, how much money should the shopkeeper return to her?

UNIT 5

Division

There are many situations in which we want to make equal groups of a given size from several objects and want to know how many groups there would be. For example, there are 6 laddoos and we wanted to give 2 laddoos to each and we want to know how many children we can give it to.
In this case, we go on giving 2 laddoos to each child till no ladoos are left.
We first give 2 laddoos to one child, then 4 are left.
Then we give 2 ladoos to the second child, then 2 are left.
Then we give 2 ladoos to the third child, then no ladoos are left.
We were able to give it to 3 children.
We express it by $6 \div 2 = 3$, where $\div$ is a symbol for division.
We read it as 6 divided by 2 is equal to 3.
There are other situations in which we need to share several things equally among a given number of persons and we want to find the share of each person.
There are 12 toffees and we wanted to distribute them equally among four children. How many toffees would each child get? We give one to each child, then another one to each child and so on till all the toffees are finished. Each child will get 3 toffees.
We express it by $12 \div 4 = 3$
We read it as 12 divided by 4 is equal to 3
The number that is divided is called the **dividend,** the number by which it is divided is called the **divisor**, the number that results is called **quotient** and $\div$ is the sign of division. For example, in $12 \div 4 = 3$, 12 is the dividend, 4 is the divisor, and 3 is the quotient.

Division facts

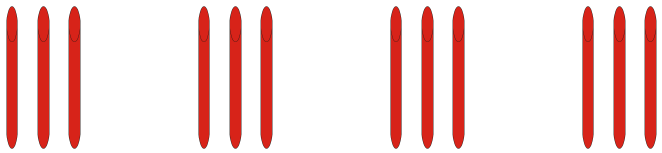
The division facts that correspond to multiplication facts (multiplication of two one-digit numbers) are called division facts.

These are very important for further learning and you should memorize them.

Aids for finding division facts

Use of sticks

Set aside as many sticks the total number of objects to be shared and make sets of size as the divisor and count the number of sets. For example, to find 12 ÷ 3, set aside 12 sticks and make sets of 3 sticks and count the number of sets which is 4, therefore 12 ÷ 3 = 4.



Repeated subtraction

To find 10 ÷ 2, we go on subtracting 2 till we reach 0 and count how many times we subtracted.

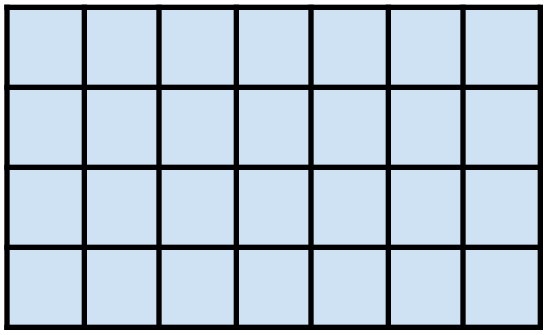
```
  10
-  2
------
   8                (1)
-  2
------
   6                (2)
-  2
------
   4                (3)
-  2
------
   2                (4)
-  2
-----
   0                (5)
-----
```

As we could subtract 2 five times, 10 ÷ 2 =5

Use of graph paper

To find a division fact Mark a 10 × 10 square in graph paper. Shade as many squares in each row as the divisor until you have as many squares as the dividend. The number of columns gives the quotient.

For example, to find 28 ÷ 7, we begin with shading 7 squares in each row and keep on counting the squares until we have 28 squares. We will need 4 rows to shade 28 squares(as 4 × 7 =28). Therefore 28 ÷ 7 = 4.



Use of Multiplication table

Relation between multiplication and division

Show the video: **https://youtu.be/tER-YslAY-8?t=286**

Multiplication and division families

We have multiplication and division families like addition and subtraction families.

Recall a family involves the same three numbers.

Learning facts in a family together will help you memorize them faster.

Verify the following: 6 × 9 = 9 × 6 = 54, 54 ÷ 6 = 9, 54 ÷ 9 = 6.

These show

The order of numbers in multiplication does not matter.

The dividend divided by the divisor gives the quotient.

The dividend divided by the quotient gives the divisor.

The product of quotient and divisor = dividend.

Thus division is the inverse of multiplication.

We can check if the division fact is correct by checking if the product of quotient and divisor is equal to dividend or not.

Use of Multiplication table

We can find the division facts from the multiplication table as follows: Shade the row labeled the divisor till you find the dividend and shade the column above that cell. Read the label of the column. It gives the quotient. For example, to find 56 ÷ 8, highlight the row labeled 8 till you find the cell with 56, then highlight the column above 56 and read the column label, which is 7, therefore 56 ÷ 8 = 7.

Multiplication Table

×	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
3	0	3	6	9	12	15	18	21	24	27
4	0	4	8	12	16	20	24	28	32	36
5	0	5	10	15	20	25	30	35	40	45
6	0	6	12	18	24	30	36	42	48	54
7	0	7	14	21	28	35	42	49	56	63
8	0	8	16	24	32	40	48	56	64	72
9	0	9	18	27	36	45	54	63	72	81

Exercise 5

1. Find the division facts for the following computations:

(a)
```
  15
 - 5
-----
  10
 - 5
-----
   5
 - 5
-----
   0
-----
```

(b)
```
   6
 - 3
-----
   3
 - 3
-----
   0
-----
```

2. Find

(a) $7 \times 3 = 21$	$21 \div 3 = 7$	$21 \div 7 = 3$
(b) 8×6	$48 \div 6$	$48 \div 8$
(c) 5×9	$45 \div 9$	$45 \div 5$
(d) 9×7	$63 \div 7$	$63 \div 9$
(e) 6×6	$36 \div 6$	
(f) 8×7	$56 \div 7$	$56 \div 8$
(g) 9×9	$81 \div 9$	
(h) 6×8	$48 \div 6$	$48 \div 8$
(i) 9×6	$54 \div 6$	$54 \div 9$
(j) 8×8	$64 \div 8$	

3. Read the following number facts:
   (a) 21 ÷ 7 = 3
   (b) 25 ÷ 5 = 5
   (c) 42 ÷ 7 = 6
   (d) 36 ÷ 6 = 6
4. Set aside 25 sticks and make sets of 5. How many sets of 5 sticks do you have? Express it as a division fact.
5. Set aside 8 sticks and make sets of 2. How many sets of 2 sticks do you have? Express it as a division fact.
6. Set aside 24 sticks and make sets of 4. How many sets of 4 sticks do you have? Express it as a division fact.
7. Set aside 12 sticks and distribute these in 4 equal heaps of sticks. How many sticks are there in each heap? Express it as a division fact.
8. Set aside 42 sticks and distribute these in 6 equal heaps of sticks. How many sticks are there in each heap? Express it as a division fact.
9. If there are 12 oranges and you want to give 2 oranges to each person, how many people can you give it to? Express it as a division fact.
10. If you want to distribute 30 sweets equally among 6 children how many will each get? Express it as a division fact.
11. Find

(a) 8 ÷ 2	(b) 12 ÷ 4	(c) 9 ÷ 3	(d) 16 ÷ 4
(e) 14 ÷ 2	(f) 18 ÷ 3	(g) 20 ÷ 5	(h) 24 ÷ 6
(i) 14 ÷ 7	(j) 24 ÷ 8	(k) 27 ÷ 9	(l) 42 ÷ 7
(m) 30 ÷ 6	(n) 56 ÷ 7	(o) 63 ÷ 9	(p) 48 ÷ 6
(q) 49÷7	(r) 63÷9	(s) 72÷8	(t) 64÷8
(u) 35÷5	(v) 28÷7	(w) 30÷6	(x) 36÷4

UNIT 7

Money

We use the money for buying things, paying bus fare, paying school fees among other uses. Indian money is in **rupees**. The worth of a note or coin is called its **denomination**. Notes are available in denominations of one, two, five, ten, twenty, fifty, one hundred, two hundred, five hundred, and two thousand rupees. Rupees 1, 2, 5, and 10 are available in coins also. Tell your parents to show you the coins and notes of various denominations if you have not seen them or do not recognize them.

We write rupees in short form as Rs. before the amount. For example, we write 57 rupees as Rs. 57.

We used to have coins of smaller denominations in **paise**.

1 rupee = 100 paise.

These are not minted or used anymore due to inflation. However, the cost of many things still involves both rupees and paise. For example, the price of petrol, domestic gas. These are written in short form as Rs.331.65, where the amount before the dot denotes rupees and that after the dot denotes paise. The paise in short form is always written as a two-digit number. We write 30 rupees 8 paise as Rs. 30.08.

Rounding off to nearest rupee

For transactions that involve both rupee and paise, we round off the money to the nearest rupee. If the paise involved are less than 50, we pay only the rupee part and paise are 50 or more, we pay one rupee more for the paise. We will round off Rs.700.25 to Rs.700, Rs.247.80 to Rs.249, and Rs.140.50 to Rs.141

Addition, subtraction, and multiplication of rupees and paise

If the transactions involve only rupees, we add rupees to rupees, subtract rupees from rupees, or multiply by a number the amount in rupees as in the numbers. Only the sum, difference, or product is in rupees.

If the amounts involve both rupees and paise, then we add rupees to rupees and paise to paise. If the number of paise after addition or multiplication is

100 or more, we convert those to rupees remembering that 100 paise is the same as 1 rupee, 200 paise is the same as 2 rupees, and 300 paise is the same as 3 rupees, and so on. We then add that to rupees.
If the number of paise to be subtracted is more than the number of paise in subtraction. We exchange a rupee from rupees for 100 paise, and reduce the rupees by 1 and increase the paise by 100 and then subtract rupees from rupees and paise from paise.

Example 1

Find

```
    1
  356 rupees and 80 paise
+135 rupees and 70 paise
--------------------------------
  491 rupees and 150 paise, which is the same as
  491 rupees and 1 rupee and 50 paise, which is the same as,
  492 rupees and 50 paise
```

Example 2

Find

```
  400 rupees
–240 rupees and 50 paise
--------------------------------
--------------------------------
```

Since we cannot subtract 50 paise from 0 paise, we exchange or borrow 1 rupee from 400 rupees and convert that to 100 paise. We can write 400 rupees as 399 rupees and 100 paise and subtract 240 rupees and 50 paise from it.

```
  399 rupees and 100 paise
–240 rupees and   50 paise
--------------------------------
  159 rupees and   50 paise
--------------------------------
```

Example 3

Multiply

4 rupees and 50 paise

× 5

= 20 rupees and 250 paise

= 20 rupees and 2 rupees and 50 paise

= 22 rupees and 50 paise

Example 4

Martha had 13 rupees; her mother gave her 20 rupees. How much money does she have now?

Martha now has

13 rupees

+20 rupees

= 33 rupees

Example 5

Ranjan bought a book costing 24 rupees. If he gave the shopkeeper a 50-rupees note, how much money should the shopkeeper return to him?

The money the shopkeeper should return to Ranjan is

41

~~5~~0 rupees

- 24 rupees

---

26 rupees

Example 6

The cost of an orange is 2 rupees. What would be the cost of 4 oranges?

Cost of 1 orange = Rs. 2

Cost of 4 oranges = Rs. 4 × 2 = Rs. 8

Example 7

Vinita bought a pencil for 3 rupees, a pen for 12 rupees and 50 paise, and a book for 24 rupees and 50 paise. How much money should she pay the shopkeeper?

She should pay the shopkeeper

3 rupee
12 rupees and 50 paise
+24 rupees and 50 paise

= 39 rupees and 100 paise
= 39 rupees and 1 rupee
= 40 rupees.

Example 8

Ravi has 12 rupees and his sister has 5 rupees. How much more money does Ravi have than his sister?

1 2 rupees
- 5 rupees
---
7 rupees

Example 9

An egg costs 1 rupee and 50 paise. What would be the cost of 6 eggs?

The cost of 6 eggs would be

1 rupee 50 paise
× 6
---
6 rupees 300 paise = 6 rupees + 3 rupees = 9 rupees

Exercise 7.1

1. How many paise are there in a rupee?
2. Round off the following to the nearest rupee:
   (a) 26 rupees and 25 paise
   (b) 13 rupees and 72 paise
   (c) 104 rupees and 50 paise
3. Ronald had 25 rupees, his mother gave him 50 rupees and his father gave him 50 rupees on his birthday. How much money does he have now?
4. Bilal had 55 rupees. He bought a toy costing 26 rupees. How much money is left with him?
5. Suman has 25 rupees and her brother has 40 rupees. How much more money does her brother have?
6. The cost of an orange is 7 rupees. How much money would you have to pay if you bought 6 oranges?
7. (a) Ranjana's mother bought potatoes worth 3 rupees and 50 paise, onions worth 5 rupees, and tomatoes worth 2 rupees and 50 paise. How much money should she pay the vegetable vendor?
   If she pays the vendor a 20-rupee note, how much money should the vendor return to her?
8. (a) A pencil costs 3 rupees. What would be the cost of 6 pencils?
   (b) If a box of 6 pencils costs 15 rupees. How much money do you save by buying a box of 6 pencils?

Reading or preparing bills

Show the video: https://youtu.be/8XpEQMgIJHQ?t=9
When we shop for several items from a shop, the shopkeeper makes a bill listing the items, the quantity, and the price of each item against it. He then totals the prices of all the items to find out the amount we should pay him. The bill has the name of a shop and the date on it.
This is called a bill. For example, the bill for shopping for a student who bought several items is given below.

Kapoor Book and Stationery Store

Shop Number 23, B block, Noida

Date 15.4.21

Item	Price per item	Number of items	Price
Book	Rs. 32	1	Rs. 32.00
Pencils	Rs. 5	4	Rs. 20.00
Notebooks	Rs. 8	6	Rs. 48.00
All Items		11	Rs 100.00

The bill shows the following information:

1. The name of the store.
2. The date on which these items were bought.
3. The rows in the first column show the items bought by the student. This student bought a book, 4 pencils, and 6 notebooks. The last row of the first column gives all items.
4. The second column shows the price of each item that the student bought. The cost of the book was Rs.32, the cost of 1 pencil was Rs.5 and the cost of 1 notebook was Rs.8.
5. The third column shows the number of different items the student bought. The student bought 1 book, 4 pencils, and 6 notebooks.
6. The fourth column shows the price of all the items of a type that the student bought. The cost of 1 mathematics book was Rs 32, the cost of 4 pencils was Rs 4 ×5 = 20 rupees, and the cost of 6 notebooks was 6 ×8 = 48 rupees.

7. The last row of this column gives the total bill of all items bought by this student that is Rs 100.

Exercise 7.2

1. The prices of various items quoted by a fruit vendor were as follows:

Item	Price per kg
Apples	Rs 40
Bananas	Rs 20
Oranges	Rs 30

Use this table to find the price of
(a) 3 kg apples
(b) 2 kg bananas
(c) 1 kg oranges
(d) Make a bill for a customer who bought the following items:
3 kg apples, 2 kg bananas, and 1 kg oranges.

2. The prices of various items quoted by a shopkeeper were as follows:

Item	Price per item
Pencils	Rs. 3
Ball pens	Rs. 12
Rubber	Rs. 2
Crayon box	Rs. 24
Notebooks	Rs. 4

Make a bill for a customer who bought the following items:
6 pencils, 2 ball pens, 3 rubbers, a packet of crayons, and 4 notebooks.

UNIT 8

Measurement

Length

Show the video: https://youtu.be/-0p2RD0VnR0
We often need to measure the length or height of objects, or the distance between places. If each of you measured the length and breadth of the room by footsteps would the answer be the same?
Why?
We need standard units for that so that everyone agrees about the measurements of things.

Standard units for measuring length

Centimetre

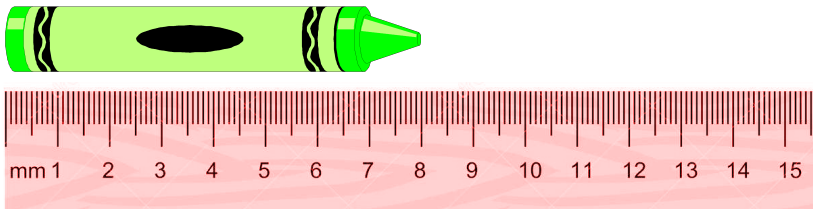
A unit of length is the centimetre. The line segment given below is

—

one centimetre long. It is written in short form as 1 cm.

Centimetre ruler

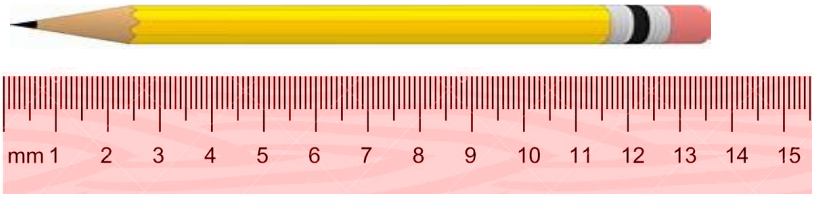
We can use a 15 or 30 centimetre ruler to measure the length of small objects such as a pencil, notebook, nail, pen, and brush.
The ruler has some lines that are long and others that are small.
The longest lines between two numbers measure a centimetre.
For measuring the length of an object keep the ruler with zero at one endpoint below the object in a horizontal position and read the number below the other end of the scale. The number gives the length of the object in centimetres.



The length of the crayon is 8 cm.

Measuring to the nearest centimetre

If the thing that you may want to measure does not have a number marked above the second edge but falls between two numbers, then take the number that is nearer to it as its measure. It is called measuring to the nearest centimetre. If it falls exactly in the middle of two numbers, we take the larger number as its measure to the nearest centimetre.



For example, the length of the pencil is between 13 and 14 cm, but it is closer to 14 cm, thus its length to the nearest centimeter is 14 cm.

Measurement of curved lines or distances around objects with curved edges

A ruler cannot be used for measuring curved lines or distances around objects with curved edges such as distance around a cup, or a cylindrical box.

We can first use a string to measure the distance around curved lines or edges of objects and then find out the length of a string by the ruler.

Metre

For measuring larger lengths or heights we use a unit called a metre.

1 metre = 100 centimètres

We measure larger objects by using a metre rod or measuring tape.

Show children a metre by showing a metre rod or a metre long stick and ask children to make a list of three things that are about a metre long, more than a metre long, and less than a metre long.

Show children a measuring tape marked in metres and centimetres and ask them to measure the length and width of a room.

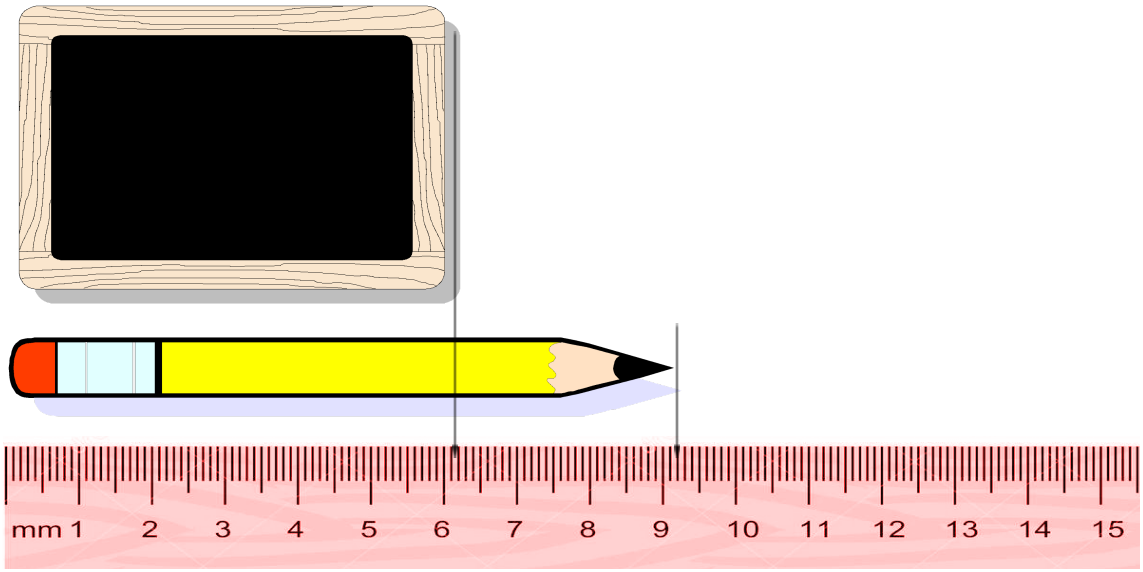
For measuring very large distances e.g. from one town to another, we use still larger units called kilometres.

1 kilometre = 1000 metres.

When you are traveling by bus to a city, you would have noticed stones marked in kilometres that give the distance that you still have to go to get to that town.

Exercise 8

1. Find the length of the following objects to the nearest centimetre.



2. Measure the length of the line segments given below to the nearest centimetre.

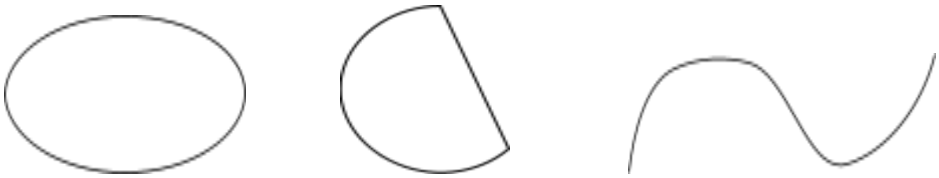
(a) _____

(b) _____

(c) ____

(d) _____

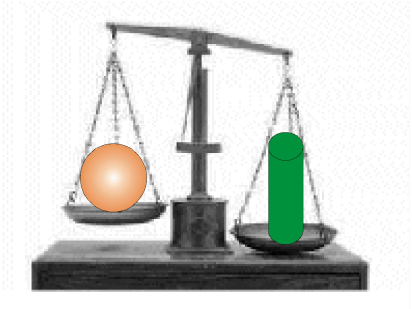
3. Draw line segments whose lengths are given below:
   (a) 1 cm
   (b) 4 cm
   (c) 5 cm
   (d) 7 cm
4. Measure the lines given below using a string first and then find out the length of the string to the nearest centimetres by the ruler.

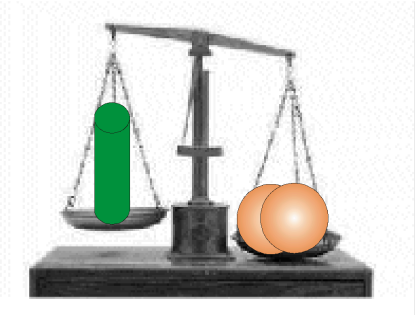


5. How many centimetres are there in a metre?
6. Convert the following to centimetres
   (a) 1 metre = _____ centimetres
   (b) 6 metres = _____centimetres
   (c) 6 metres 25 centimetre = _____centimetres
7. Convert the following to metres
   (a) 100 centimetres = _____metres
   (b) 400 centimetres = _____metres
   (c) 250 centimetres = _____metres and _____centimetres
8. What units (metre or centimetre) would you use for measuring the following:
   (a) length of a matchbox
   (b) height of a room
   (c) width of a chair
   (d) length of your school Hall
   (e) length of your pencil box

Weight

Show the video: https://youtu.be/qUOQrXmfwDM
Ask students to take out two objects of different weights from their school bag, one in each hand, and ask the student to tell which one weighs more and which one weighs less.
The object that weighs more is called **heavier** and the object that weighs less is called **lighter**.
We can also tell which object weighs more by using a balance. The side of the balance with heavier objects goes down.
The figures given below show
one cylinder is heavier than one sphere.
Two spheres are heavier than one cylinder.





We can use smaller objects like marbles with the same weight to measure and compare weights in terms of those.

Activity 8.1

Ask students to weigh a number of objects using marbles or other objects of the same weight.

Activity 8.2

Ask students to compare the weights of two objects by first finding their weight in terms of marbles.

Activity 8.3

Show using a balance two clay balls have the same weight. Then change the shape of one and ask them if they have the same weight.
Some students may say no. Show using a balance that they have the same weight.
Repeat with clay balls of different weights and other shapes until they realize that changing the shape does not change the weight.

Capacity

Show the video: https://youtu.be/TkXxn0bJ4r0?t=63
Ask children to bring empty bottles, plastic mugs, etc., and ask them which of two specific containers would contain more?
Which of the two specific containers would contain less?
Would any of these containers contain about the same amount of water?
The quantity of liquid a container can hold is called its **capacity**.

Ordering objects in order of capacity

We can compare the capacity of two containers by filling one container with water and pouring it into the other.
If the second is full and some water is leftover in the first, the first one has more capacity.
If we can pour all the water and the second one is still not filled then the first one has less capacity.
If the second is also full and no water is left over, both have the same capacity.
We can estimate the capacity of a big container in terms of a mug by pouring in mugs of water till it fills and counting the number of mugs used to fill it.
We can also compare the capacity of two containers by this procedure. The container that requires a larger number of mugs to fill it has more capacity

Activity 8.4

Ask students to find the capacity of a container, say a bucket in terms of a jug. Repeat it for other containers.

Activity 8.5

Ask students to compare the capacity of two containers by first finding the capacity of two containers in terms of a smaller container.

Activity 8.6

Take a container having some amount of water in it. Pour the water from this container into another having a different shape and ask if the second container has the same amount of water.
If some students say no, then pour it back into the empty container to demonstrate that it is the same.

Repeat it with containers of different sizes till they realize that the amount of a liquid is conserved when transferred to a container of a different shape.

UNIT 9

Time

Show the video: https://youtu.be/MaVgBjVh4b8?t=146
We need to know the time for many activities . For example, the time at which the school will start or a TV programme will begin.
A clock helps us to find out what time it is?
The face of a clock is given below:

It is marked with numerals 1 to 12.
It has two hands. The shorter hand is the **hour hand**. The longer hand is the **minute** hand.
The hands always move in the same direction. The direction in which the hands move is called **clockwise**(↷) direction. The opposite direction is called a **counterclockwise or anticlockwise** direction.
The hour hand takes one hour to move from one numeral to the next. It takes 12 hours to come back to the same numeral again.
The minute hand takes 5 minutes to go to the next numeral or 60 minutes or one hour to come back to the same numeral.
The position of the minute hand and hour hand tells us the time. When both the minute hand and hour hand are at 12 the time is 12 o'clock.
The duration of the time from one midnight to the next midnight is a **day**.
A day has 24 hours.
A clock shows 12 o'clock at midnight as well as noon.
A clock shows the same time twice a day.
The time from 12 o'clock at midnight to just before 12 o'clock at noon is denoted by **a.m.** and at 12 o'clock and after that is denoted by **p.m.**

When the minute hand points to 12 and the hour hand points to a number say 3, the time is 3 **o'clock**.

3 o'clock

When the minute hand points to a numeral other than 12, the hour hand would be between two numerals. When the minute hand is at 6 and the hour hand is in the middle of two numerals, say 4 and 5 the time is **half-past** four.

Half-past four

Exercise 9.1

1. What times are shown on the clocks given below:

(a)

(b)

(c)

(d)

(e)

(f)

2. Print the clocks without hands from activity sheet 9.
   Draw the hour hand and minute hand on the face of the clocks to show the time given below:
   (a) 5 o'clock
   (b) 8 o'clock
   (c) 12 o'clock
   (d) half-past 9
   (e) half-past 6
   (f) half-past 12
3. Fill in the blanks with a.m. or p. m.
   (a) I get up at 7 ____
   (b) I have my lunch at 2 ____
   (c) I sleep at 9 ____
   (d) My school bus comes at 8 ____

Days, months, and year

A **day** is from one midnight to the next midnight.
The time it takes the earth to revolve around the sun is taken as a **year**.
A year has 365 or 366 days.
As the earth takes 365 days and 6 hours to rotate around the sun. Every fourth year, a year has 366 days. That year is called a **leap year**.
The time of a particular event e.g. birth, death is specified by the day, month, and year.
The day Christ the founder of the Christian religion was born is taken as the year zero in the present numbering of years. The years before that are counted as so many years before Christ.
The months in a year and days in different months are as follows:
There are 12 months in a year.
January is the first month of the year and has 31 days.
February is the second month of the year and has 29 days in a leap year and 28 days in other years.
March is the third month of the year and has 31 days.
April is the fourth month of the year and has 30 days.
May is the fifth month of the year and has 31 days.
June is the sixth month of the year and has 30 days.
July is the seventh month of the year and has 31 days.
August is the eighth month of the year and has 31 days.
September is the ninth month of the year and has 30 days.
October is the tenth month of the year and has 31 days.
November is the eleventh month of the year and has 30 days.
December is the twelfth month of the year and has 31 days.
Days in each month begin with 1 and increase by one till the number of days it has.
A year begins with the first day of January and ends with the thirty-first of December.
After December, January of next year comes and the other months follow in the same order.
Learning the poem given below will help you in remembering days in different months.

Poem

Thirty days has September,
April, June, and November.
All the rest have thirty-one,
Except for February alone,
which has twenty-eight days clear
and twenty-nine in each leap year.

Calendar

A **date** is specified by a day, month, and year. It is important to know the date when an event took place e.g. when a person was born when a law was made. We write a date as 7th April 2004 or April 7, 2004, or 7.4.2004.

A calendar shows months of a year and days in a month and names of days of the week on different dates.

A week has 7 days.

The names of the days in a week in order are **Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday.**

These are followed again by these days in the next week.

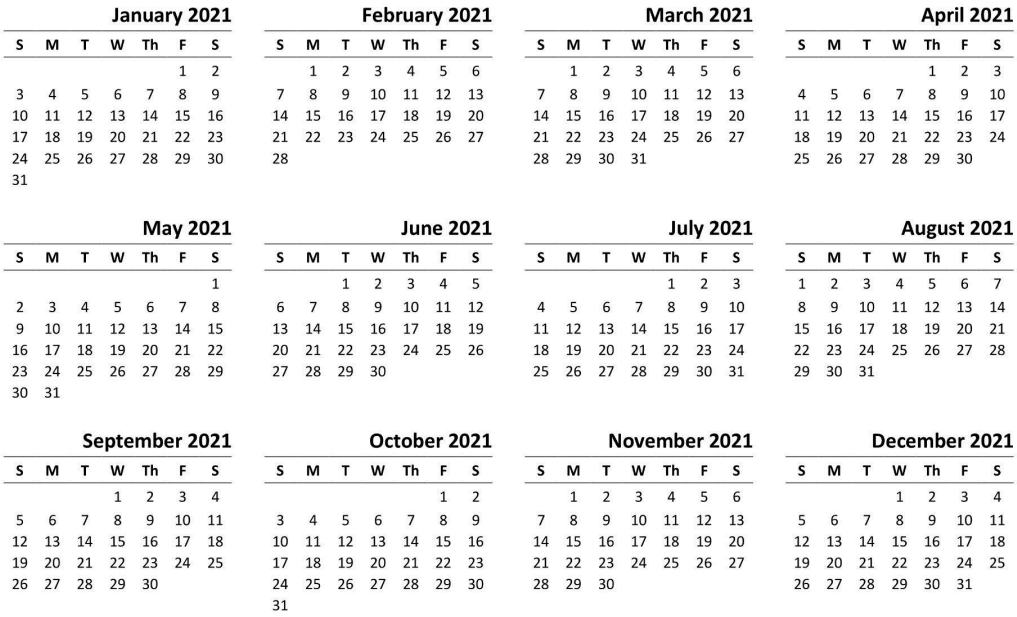
Monday is taken as the first day of the week.

A calendar is helpful in finding the days of the week on which a particular day would fall or the date on which a particular day, say first Sunday, Second Saturday would fall.

Can you suggest some situations in which you would want to know these?

A calendar for the year 2021 is given below:

Calendar-2021



January 2021

S	M	T	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

February 2021

S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28						

March 2021

S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

April 2021

S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

May 2021

S	M	T	W	Th	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

June 2021

S	M	T	W	Th	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

July 2021

S	M	T	W	Th	F	S
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

August 2021

S	M	T	W	Th	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

September 2021

S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30		

October 2021

S	M	T	W	Th	F	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

November 2021

S	M	T	W	Th	F	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

December 2021

S	M	T	W	Th	F	S
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Give examples of dates of important festivals and demonstrate how to find the day of the week for these from a calendar.

Also, show the day of the month on which the first Sunday or last Saturday of a month would fall**.**

Exercise 9.2

1. Fill in the blanks:
   (a) 1 hour = ____ minutes
   (b) 1 day = ____ hours
   (c) 1 week =____ days
   (d) 1 year = ____ days
   (e) 1 year = ____ months
2. Name the days of the week in order.
3. Name the months of a year in order and the number of days in each month.
4. Fill in blanks
   (a) March is the _____month of the year.
   (b) June is the _____month of the year.
   (c) November is the _____month of the year.
   (d) December is the _____month of the year.
5. (a) Name the second month of the year.
   (b) Name the eighth month of the year.
   (c) Name the tenth month of the year.
6. Fill in blanks
   (a) Monday is the _____day of the week.
   (b) Sunday is the _____day of the week
7. (a) Name the second day of the week.
   (b) Name the fourth day of the week.
8. If today is Sunday, what day was yesterday?
9. If today is Friday, name the day tomorrow?
10. Write the date 5.7.2004 in a different way.
11. Write the date today in two ways.
12. On which day or days is your school closed every week?
13. The Republic Day is on 26 January, find the day of the week on which it would fall this year.
14. When is your birthday? Find the day of the week on which it would fall this year.

15. Independence Day is on 15th August, find the day of the week on which it would fall this year.
16. Where do you find dates written in your surroundings?
17. Suggest some situations in which you would want to know the day on which a date falls.
18. Some banks are closed on the second Saturday of the week. On which date were they closed in July 2021?
19. What is your date of birth?

UNIT 10

Collect, Organize and Display Data.

Ask students to cut squares with different animals in Activity Sheet 10.1 and paste these in squares beginning with the second row in Activity sheet 10.2 so that each column has the same animal. Make sure that there are no blank squares between two animals in a column

When all the shapes are pasted, ask students

1. How many different animals are there?
2. Write the names in the first row at the top of the column name of animals in different columns.
3. How many animals are in different columns?
4. Which animal is most frequent?
5. Which animal is least frequent?
6. Are there more dogs or cats? How many more?
7. How many animals are there in all?

Ask students to cut squares with different shapes in Activity Sheet 10.3 and paste these into squares in Activity sheet 10.4 so that each column has the same shape.

Make sure that there are no blank squares between two shapes in a column

When all the shapes are pasted, ask students

1. How many different shapes are there?
2. Name the shapes in different columns.
3. How many different shapes are in different columns?
4. Which shape is most frequent?
5. Which shape is least frequent?
6. Are there more rectangles or circles? How many more?
7. How many shapes are there in all?

Display of Data-Pictographs

Show the video: https://youtu.be/-W_cnD4yZWU

(Start the video beginning at 28:56 minutes)

A pictograph is a graph that uses pictures to give information**.**

Draw five lines on the board and label the rows with the four most popular

fruits. Tell the students they should come up one by one and draw a smiley face in the row of the fruit they like the most of the four fruits listed

Fruits Students of Class 3 like the Most

Banana	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺
Guava	☺ ☺ ☺ ☺ ☺ ☺
Orange	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺
Apple	☺ ☺ ☺ ☺ ☺ ☺ ☺ ☺
Other	☺ ☺

Key: ☺-1 student

Then ask students

1. How many students like bananas the most?
2. How many students like apples the most?
3. Which row had the most pictures? What does that mean?
4. Which row had the fewest pictures? What does that mean?
5. What title should be given to the table?

In the above pictograph, each face represents one student.

If the number of objects is large, a face can be used to represent two or more objects.

The number of objects a picture represents is called a **key**.

We write it at the bottom of the pictograph.

Now make a second chart in which a face represents two objects.

Fruits Students of Class 3 like the Most

Fruit	Number of students that prefer the fruit
Banana	☺ ☺ ☺ ☺ ☺ ☺ ☺
Guava	☺ ☺ ☺
Orange	☺ ☺ ☺ ☺ ☺ ☺
Apple	☺ ☺ ☺ ☺
Other	☺

Key: ☺ = 2 students

1. How many students does each face represent?"
2. How many students like bananas the most?
3. How many students like apples the most?
4. What is the most popular fruit?
5. What is the least popular fruit?
6. How many more like bananas rather than guavas?
7. When a smiley face represents two, how do you show that ten people chose that fruit?
8. When a smiley face represents two persons, how do you show that eleven people chose that fruit?
9. What are the advantages and disadvantages of representing a person/object by more than one person/object?
10. Describe how to make a pictograph.

Exercise 10.1

1. The pictograph below shows children in a class born in different months:

January	☺ ☺ ☺
February	☺ ☺ ☺ ☺ ☺ ☺
March	☺ ☺ ☺ ☺ ☺
April	☺ ☺
May	☺
June	☺ ☺ ☺
July	☺ ☺ ☺ ☺
August	
September	☺ ☺ ☺
October	☺ ☺ ☺ ☺
November	☺ ☺ ☺
December	☺ ☺

   (a) How many children were born in January?
   (b) How many children were born in October?
   (c) How many children were born in August?
   (d) In which month the maximum number of children were born?
   (e) In which month the minimum number of children were born?
   (f) How many more children have birthdays in February than October?
   (g) What is the total number of children in the class?
2. The students collected flowers given in Activity Sheet 10.5. Cut and paste these and make a pictograph showing different flowers in Activity Sheet 10.6.

The names of these flowers are as follows:

Hibiscus

Magnolia

Rose

Sunflower

Answer the questions given below from the pictograph you have made:

(a) How many Hibiscus flowers are there?
(b) How many Magnolia flowers are there?
(c) Which flower has the largest number?
(d) Which flower has the smallest number?
(e) How many more sunflowers are there than roses?
(f) How many flowers are there in all?

UNIT 11

Patterns

Show the video: https://youtu.be/AW6sA5zKfEs

We create patterns when we arrange actions, objects, figures, numbers in a particular order and repeat them over and over again.

We can also create patterns by using a rule to find a sequence of numbers.

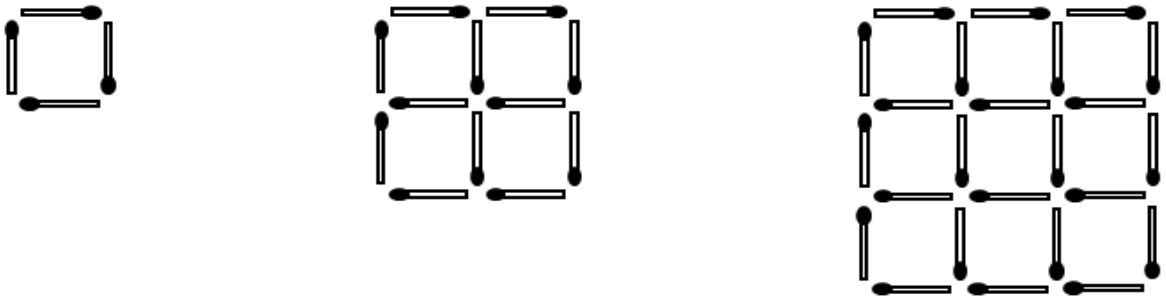
Making patterns with shapes and lines

Activity 11.1

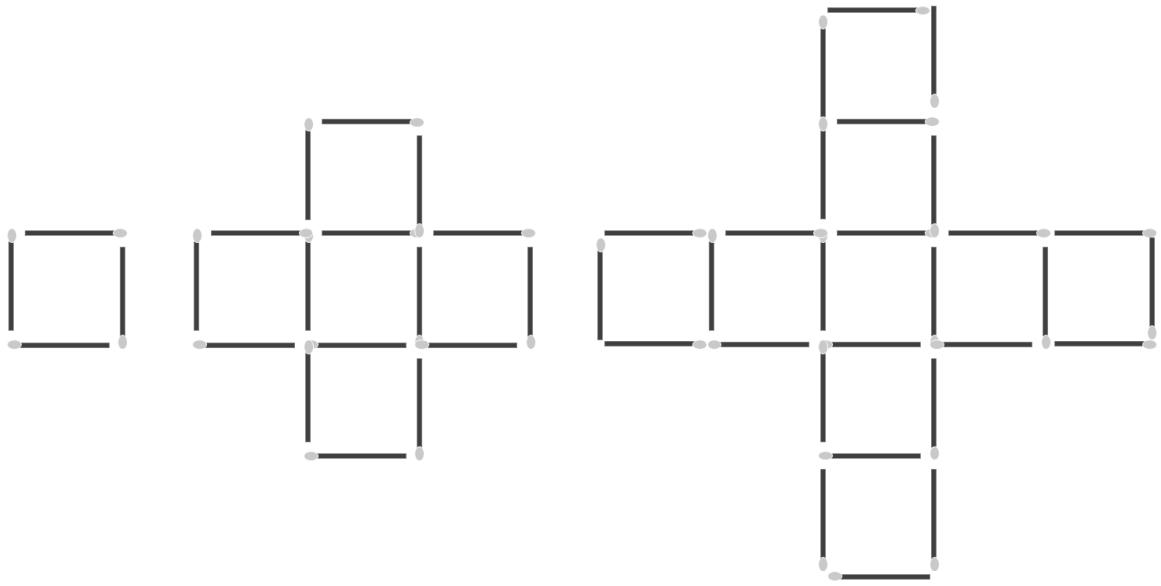
1. Make the patterns given below with matches or toothpicks and continue the pattern for the next figure.

   (a)

   (b)



(c)



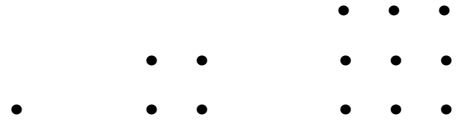
2. Make some new patterns with toothpicks or matches.
3. Copy and extend patterns made by others.
4. Make patterns by drawing around geometrical shape-cards or tangram pieces.
5. Copy and extend patterns made by others.
6. Look for some patterns in your surroundings and describe them in the class.

Growing patterns

1. Make the next figure in the pattern given below:

(a) How many dots are there in the next figure?
(b) How long can you continue this pattern?

2. Make the next figure in the pattern given below:



(a) How many dots are there in the next figure?

(b) How long can you continue this pattern?

Number patterns

1. Write the rule for the following
   7 + 0 = 7
   56 + 0 = 56
   543 + 0 = 543
2. 6 × 1 = 6
   50 × 1 = 50
   347 × 1 = 347
3. 3 × 10 = 30
   7 × 10 = 70
   16 × 10 = 160

Patterns in addends with the same sum

We can find many numbers whose sum is 7. For example,

7 + 0 = 7
6 + 1 = 7
5 + 2 = 7
4 + 3 = 7
3 + 4 = 7
2 + 5 = 7
1 + 6 = 7
0 + 7 = 7

(a) Do you notice any patterns in the addends for the same number? Explain it.

(b) Write all the addends for 10. Does the same pattern hold for 10?

Patterns in addition of odd and even numbers

Even and odd numbers

Shade alternate numbers beginning with 2 in a hundred table.

The shaded numbers are called **even**. All other numbers are called **odd**.

1. Which of the following numbers are even?
   6, 9, 10, 16, 7, 5, 13
2. Which of the following numbers are odd?
   2, 8, 3, 7, 9, 11
3. Is the sum of two even numbers always even? If not, give a counterexample.

4. Is the sum of two odd numbers always odd? If not, give a counterexample.
5. Would the sum of an even and an odd number be odd or even?
6. For each of the following numbers write whether the sum would be even or odd?
   (a) 3 + 7
   (b) 6 + 12
   (c) 5 + 10
   (d) 45 + 78
   (e) 25 + 32

Identify symmetrical shapes

Show the video: https://youtu.be/L3g9B5Hzzo4

Demonstrate symmetrical shapes by drawing a line that divides a symmetrical figure into similar halves and folding the paper on the line and opening it or using a mirror for one half.

Ask the students what they notice about the figure?

If a picture can be folded along a line so that the two parts cover each other exactly, then the picture is said to be **symmetrical about the line.**

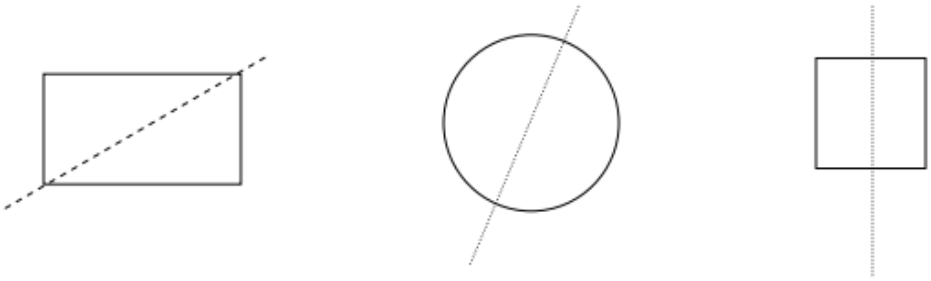
We find many examples of symmetrical things around us e.g. leaves, butterflies, geometrical figures, capital letters.

Activity 11.2

1. Collect leaves, pictures from magazines, geometrical shapes
   (a) Which of these are symmetrical and which are not?
   (b) How did you find it out?
2. Fold a paper, make a design or figure on it and cut it and open it. What do you notice? (It is symmetrical about the fold.)

3. If a line cuts a figure into half would it always be symmetrical? (No, as the following figures show)

4. (a) Which of the following pictures are symmetrical about the line drawn in them?



(b) How did you find it out?

5. (a) Can you draw some more lines of symmetry in symmetrical figures?
(b) If yes, trace the figures and draw them.

ANSWERS TO SELECTED EXERCISES

Exercise 1.1

5. (a) Thirty (b) Fifty (c) One hundred
   (d) One thousand
6. (a) 381 (b) 613 (c) 473 (d) 256
   (e) 924 (f) 105 (g) 867 (h) 792
   (i) 117 (j) 708
7. (a) Forty-three (b) One hundred
   (c) Four hundred sixty-seven (d) Six hundred eighty-nine
   (e) Three hundred ninety-nine (f) Nine hundred ninety-nine
8. (a) 248, 249, 250 (b) 390, 391, 392 (c) 705, 706, 707
   (d) 400, 401, 402
9. (a) 455, 454, 453 (b) 870, 869, 868 (c) 607, 606, 605
   (d) 900, 899, 898
10. (a) 458 (b) 321 (c) 300

Exercise 1.2

1. (b) 647 (c) 382 (d) 450 (e)896
   (f) 700
2. (b) 6 hundreds + 2 tens + 7 ones
   (c) 8 hundreds + 4 tens + 0 ones
   (d) 3 hundreds + 0 tens + 8 ones
   (e) 9 hundreds + 9 tens + 9 ones
3. 10
4. 10
5. (b) Rs. 526 (c) Rs. 600 (d) Rs. 850 (e) Rs. 349
   (f) Rs. 106 (g) Rs. 502
6. (b) tens (c) hundreds (d) tens (e) tens
   (f) ones
7. (b) 7 (c) 100 (d) 30 (e) 0
   (f) 0
8. 999
9. 100
10. (a) 72 (b) 951 (c) 632 (d) 740
11. (a) 68 (b) 239 (c) 467 (d) 257
12. (a) 48, 84 (b) 36, 63 (c) 257, 275, 527, 572, 725, 752

Exercise 1.3

1. (a) < (b) > (c) < (d) < (e) >
   (f) < (g) < (h) < (i) =

2. (a) 178, 283, 456
   (b) 372, 416, 485
   (c) 329, 549, 678
   (d) 7, 239, 280
   (e) 49, 337, 451
3. (a) 785, 382, 154
   (b) 800, 756, 457
   (c) 390, 68, 8
   (d) 600, 458, 8
   (e) 400, 90, 28

Exercise 2.1

16. (a) 5 (b) 30 (c) 0

Exercise 2.2

2. 975 3.969 4. 588 5. 599 6. 600

Exercise 2.3

1. 648	2. 398	3, 747	4. 509	5. 879	6. 799
7. 899	8. 877	9. 996	10. 789	11. 886	12. 479
13.796	14. 798	15. 798	16. 889	17. 989	

Exercise 2.4

1. (b) 1 ten + 0 ones (c) 2 hundreds + 3 tens
   (d) 1 hundreds + 6 tens (e) 1 hundred + 0 tens + 0 ones
   (f) 0 hundreds + 0 tens + 6 ones
2. (b) 829 (c) 969 (d) 734 (e) 825 (f) 735
   (g) 893 (h) 941 (i) 724

Exercise 2.5

1. 773	2.803	3. 803	4. 765	5. 790	6. 623
7. 903	8. 883	9. 900	10. 721	11. 643	12. 892
13. 906	14. 773	15. 893	16. 903	17. 636	

Exercise 2.6

1. 673 runs	2. 601 people	3. 717 children	4. 178 marks
5. Rs. 365	6. Rs. 600	7. Rs. 500	8. 53 goats
9. 160 runs	10. 5 runs		

Exercise 3.1

1. 15	2. 212	3. 320	4. 132	5. 70
6. 552	7. 323	8. 700	9. 614	10. 431

Exercise 3.2

1. 15	2. 44	3. 122	4. 73	5.343	6. 442
7. 153	8. 532	9. 163	10.822	11. 725	12. 822
13. 333	14. 300	15. 661			

Exercise 3.3

2. 328	3. 177	4. 277	5. 378	6. 698
7. 176	8. 152	9. 543	10. 218	11. 256
12. 108	13. 287	14. 157	15. 150	

Exercise 3.4

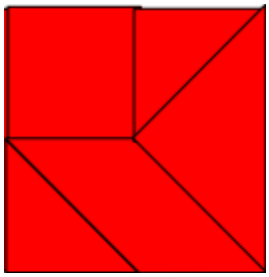
1. 144	2. 435	3. 246	4. 68	5. 109
6. 536	7. 772	8. 0	9. 106	10. 281
11. 192	12. 148	13. 493	14. 87	15 427

Exercise 3.5

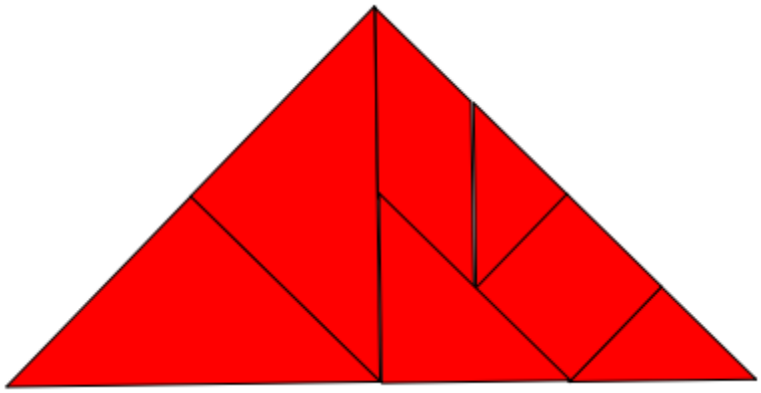
1. 458 boys	2. 803 children	3. 85 boys	4. 135 oranges
5. 43 cows	6. Rs. 25	7. (a) Rs.200	(b) Rs. 75
8. 39 passengers	9. 31 kg	10. Rs. 35	

Activity 4.4

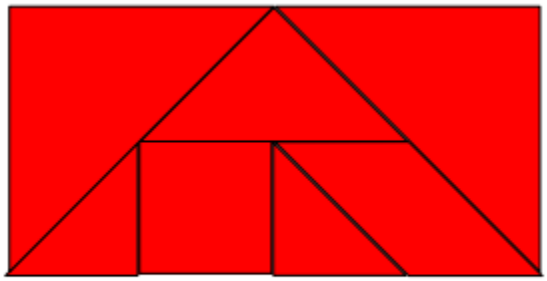
A square made with 5 tangram pieces



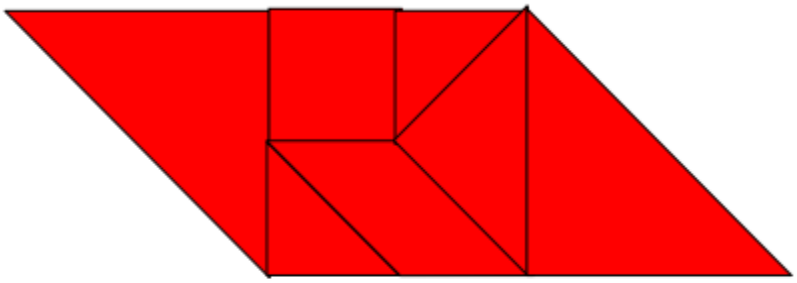
Triangle



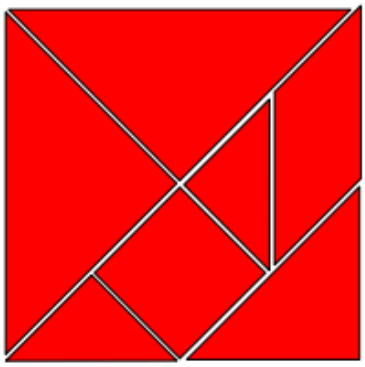
Rectangle



Parallelogram



Square



Exercise 5.1

2. (b) $3 \times 3 = 9$ (c) $5 \times 6 = 30$ (d) $8 \times 7 = 56$ (e) $1 \times 5 = 5$
3. $3 \times 2 = 6$ 4. $3 \times 3 = 9$ 5. $2 \times 4 = 8$ 6. 4 7. 5

Exercise 5.2

1. The product of any number and 0 is 0.
2. The product of any number and 1 is the number.
3. It is 0 for all the numbers.
4. The numbers in one's place are 0 or 5.

Exercise 5.5

1. 0-9 beginning with the second row.
2. 0-9 beginning with the second column.
3. In the first row of the first column.
4. The row labeled as 2.
7. The row labeled 3 and column labeled 4 and the row labeled 4 and column labeled 3 both intersect at 12. Thus $3 \times 4 = 4 \times 3$.

Exercise 5.6

1. 0 2. 0 3. 0 4. 90 5. 300
6. 210 7. 800 8. 900
9. (a) 1 hundred + 2 tens (b) 3 hundreds + 7 tens
   (c) 5 hundreds + 6 tens
10. (a) 473 (b) 242 (c) 764
11. 88 12. 45 13. 300 14. 68
15. 92 16. 72 17. 952 18. 925
19. 960 20. 782 21. 896 22. 952
23. 852 24. 846 25. 875

Exercise 5.7

1. 16 beads 2. Rs. 18 3. 60 pencils 4. 168 days
5. 100 candles 6. 72 eggs 7. 870 students 8. 496 legs
9. Rs. 27 10. Rs. 2

Exercise 6

1. (a) $15 \div 5 = 3$
   (b) $6 \div 3 = 2$
2. (b) 8, 6 (c) 5, 9 (d) 9, 7 (e) 6 (f) 8, 7 (g) 9
4. $25 \div 5 = 5$
5. $8 \div 2 = 4$
6. $24 \div 4 = 6$
7. $12 \div 4 = 3$
8. $42 \div 6 = 7$
9. $12 \div 2 = 6$
10. $30 \div 6 = 5$

Exercise 7.1

1. 100 paise 2. (a) Rs. 26 (b) Rs. 14 (c) Rs. 105
3. Rs. 125 4. Rs.29 5. Rs. 15 6. Rs. 42
7. Rs. 11 8. (a) Rs. 18 (b) Rs. 3

Exercise 8.1

5. 100 cm 6. (a) 100 cm (b) 600 cm (c) 625 cm
7. (a) 1 m (b) 4 m (c) 4 m and 50 cm

8. (a) cm (b) m (c) cm (d) m
(e) cm

Exercise 9.1

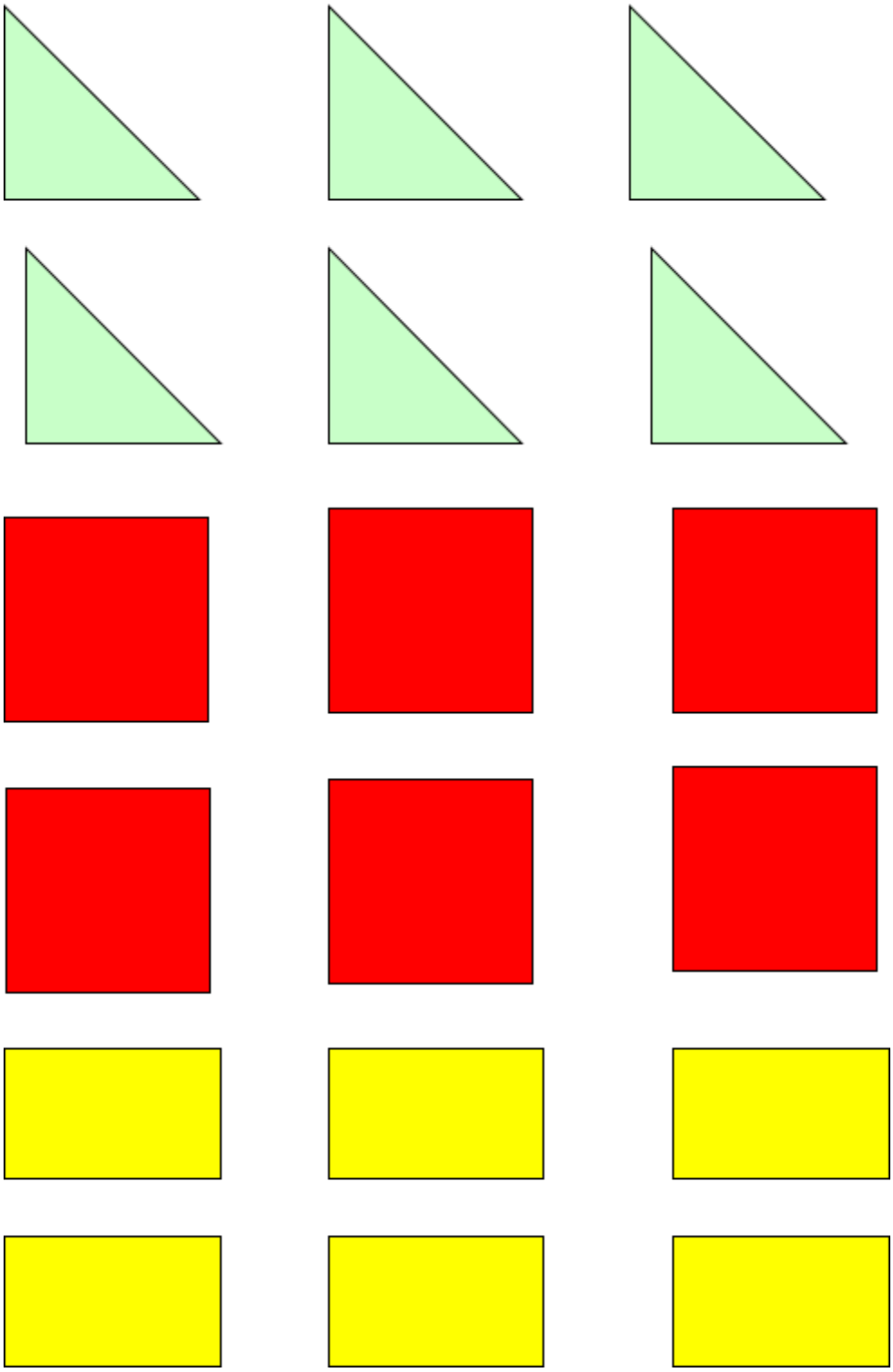
1. (a) 1 o'clock (b) 3 o'clock (c) 2 o'clock
(d) half past 2 (e) half past 1 (f) half past 3
3. (a) a.m. (b) p.m. (c) p.m. (d) a.m.

Exercise 9.2

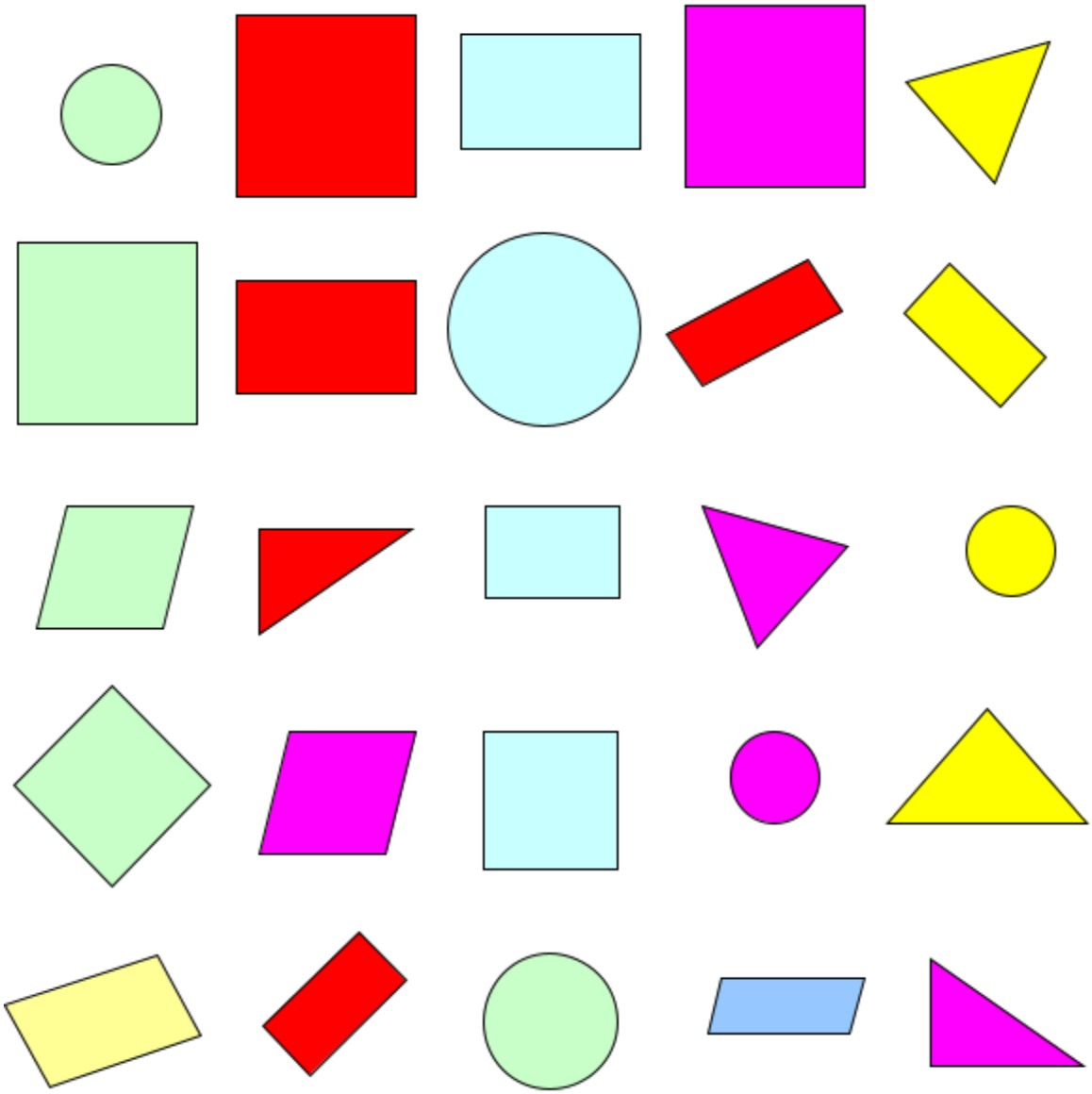
1. (a) 60 minutes (b) 24 hours (c) 7 days
(d) 365 days and 366 days in a leap year (e) 12 months
2. Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, and Sunday.
3. Check with the calendar.
4. (a) third (b) sixth (c) eleventh (d) twelveth
5. (a) February (b) August (c) October
6. (a) First (b) seventh 7. (a) Tuesday (b) Thursday
8. Saturday 19. Saturday 12. Sunday or Saturday and Sunday
18. Tenth

ACTIVITY SHEETS

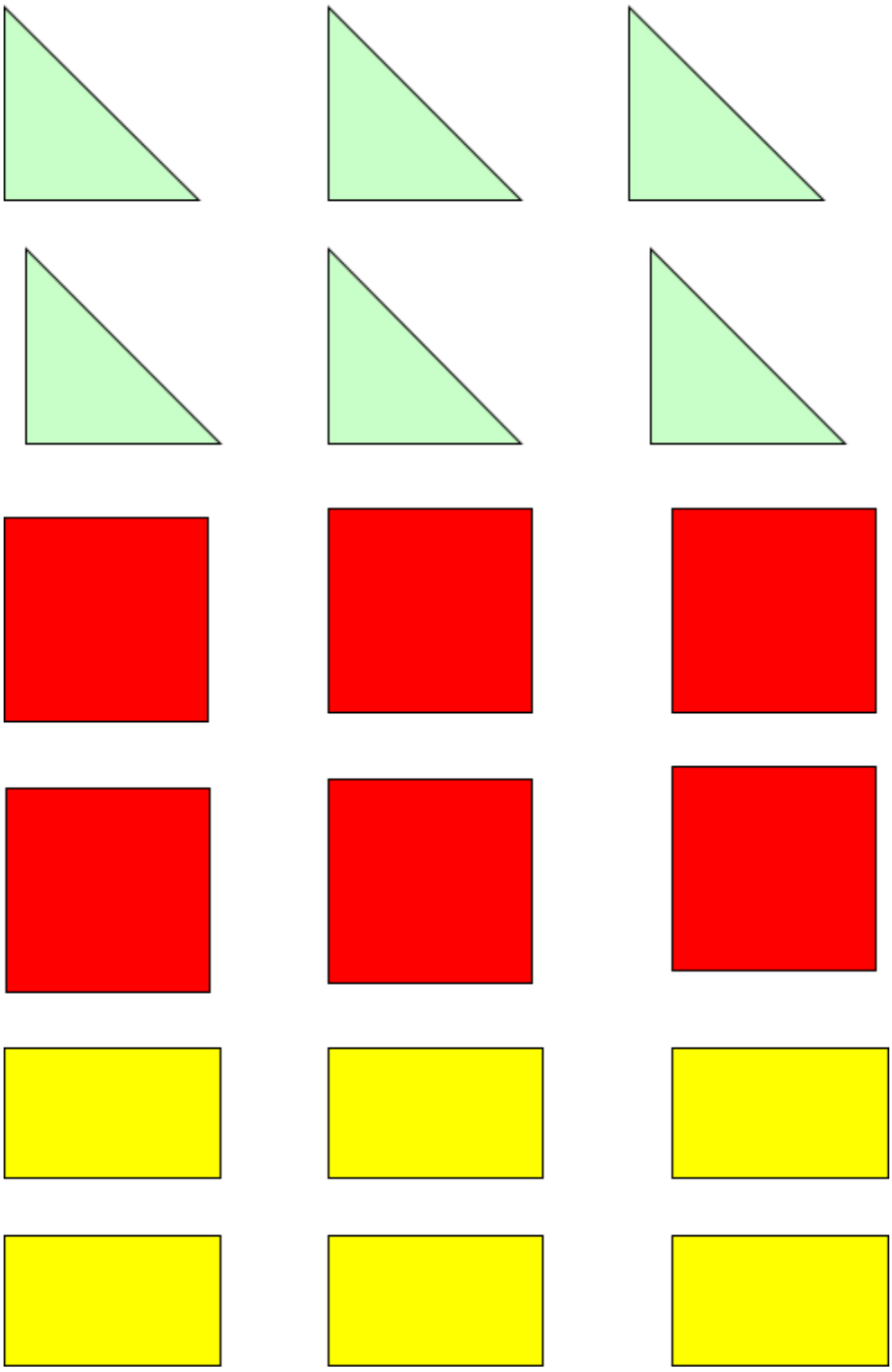
Activity Sheet 4.1



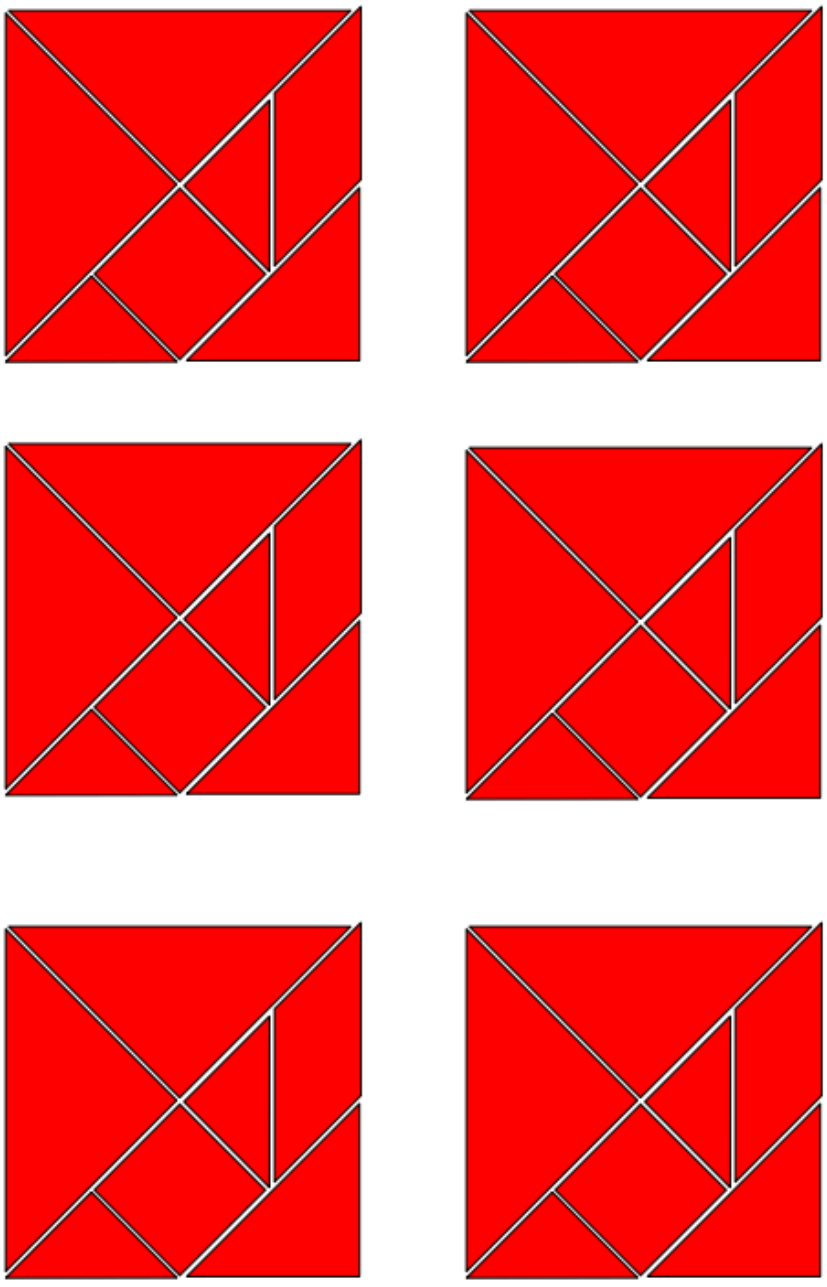
Activity Sheet 4.2



Activity Sheet 4.3

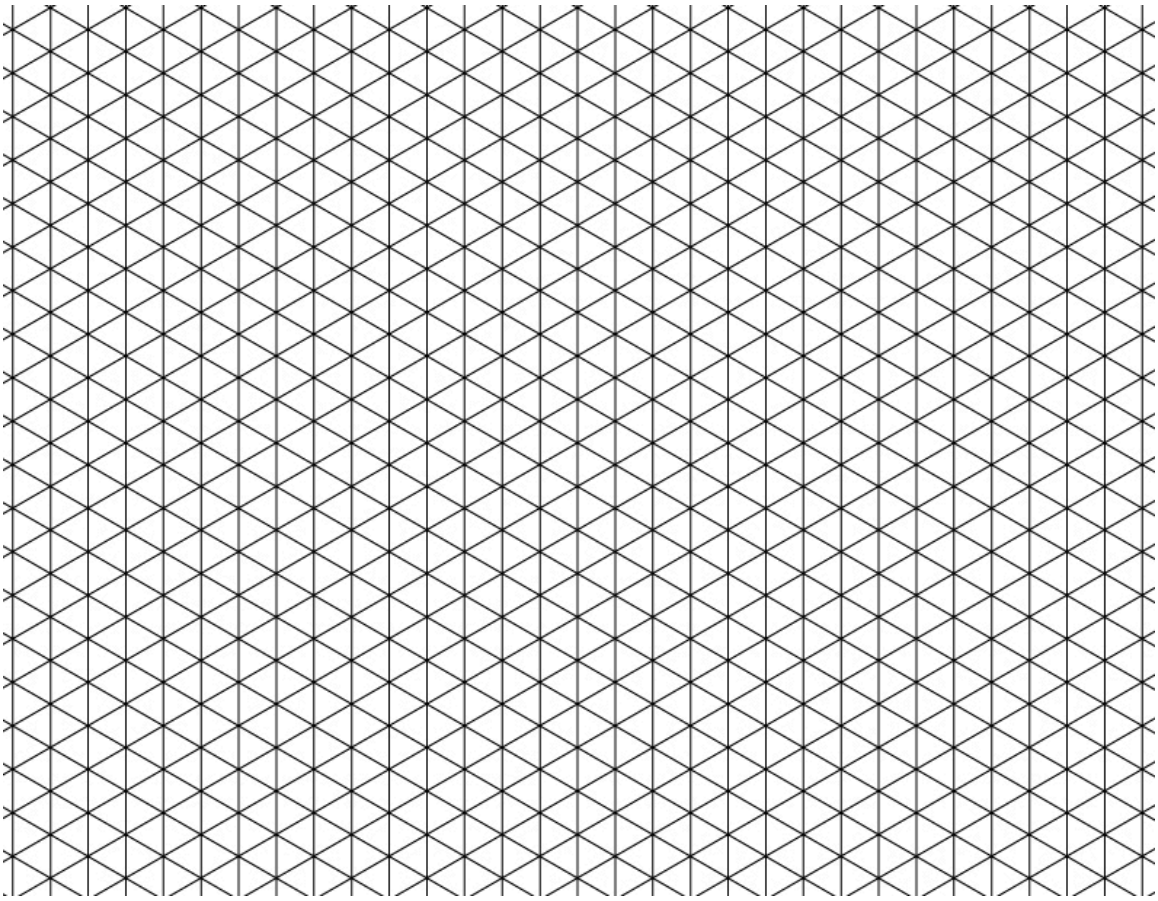


Activity Sheet 4.4-Tangrams



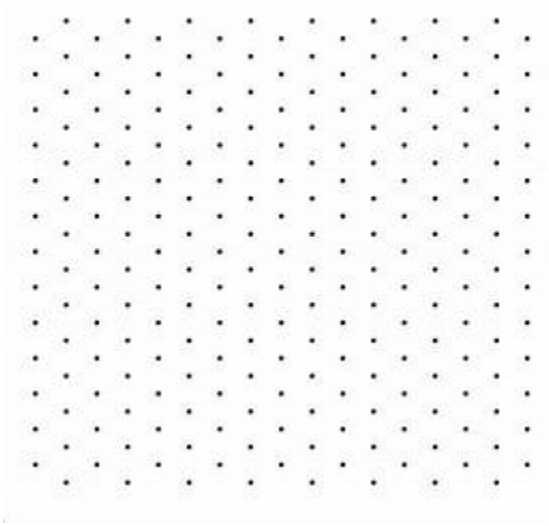
Activity Sheet 4.5

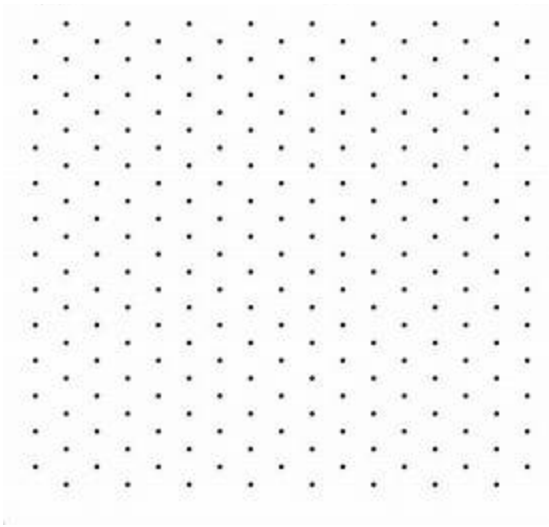
Isometric Grid



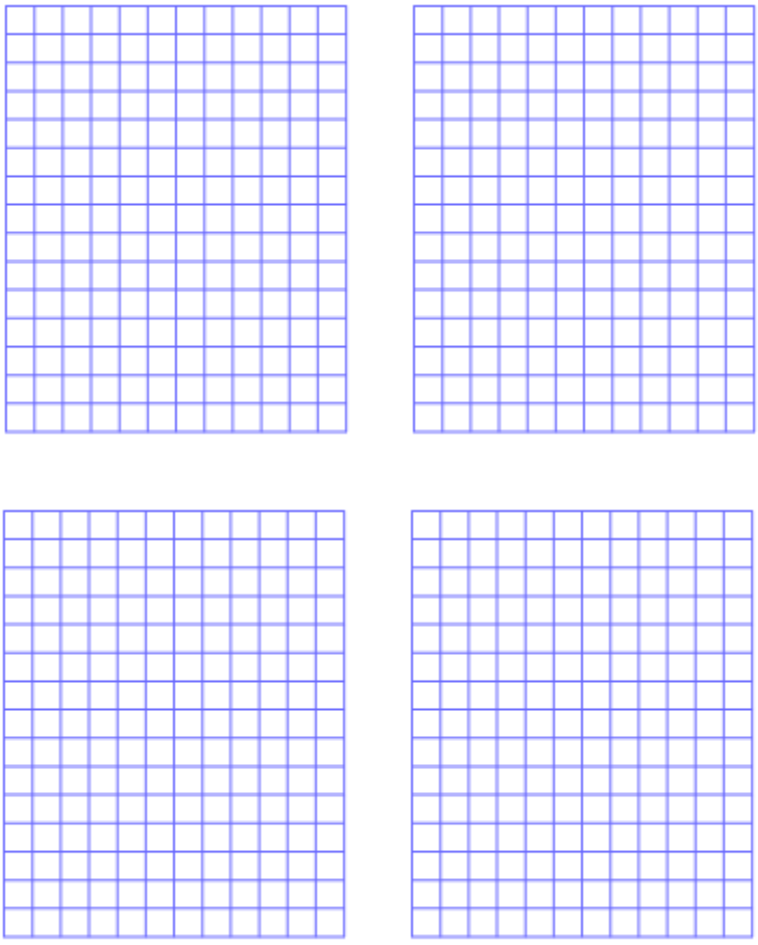
Activity Sheet 4.6

Isometric Dot Paper

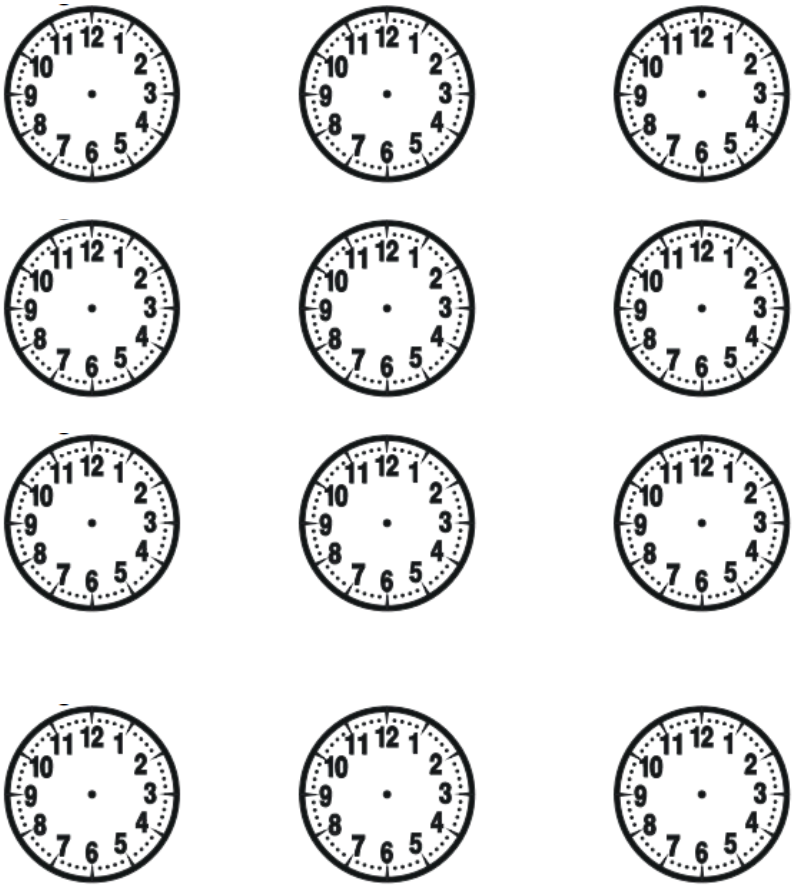




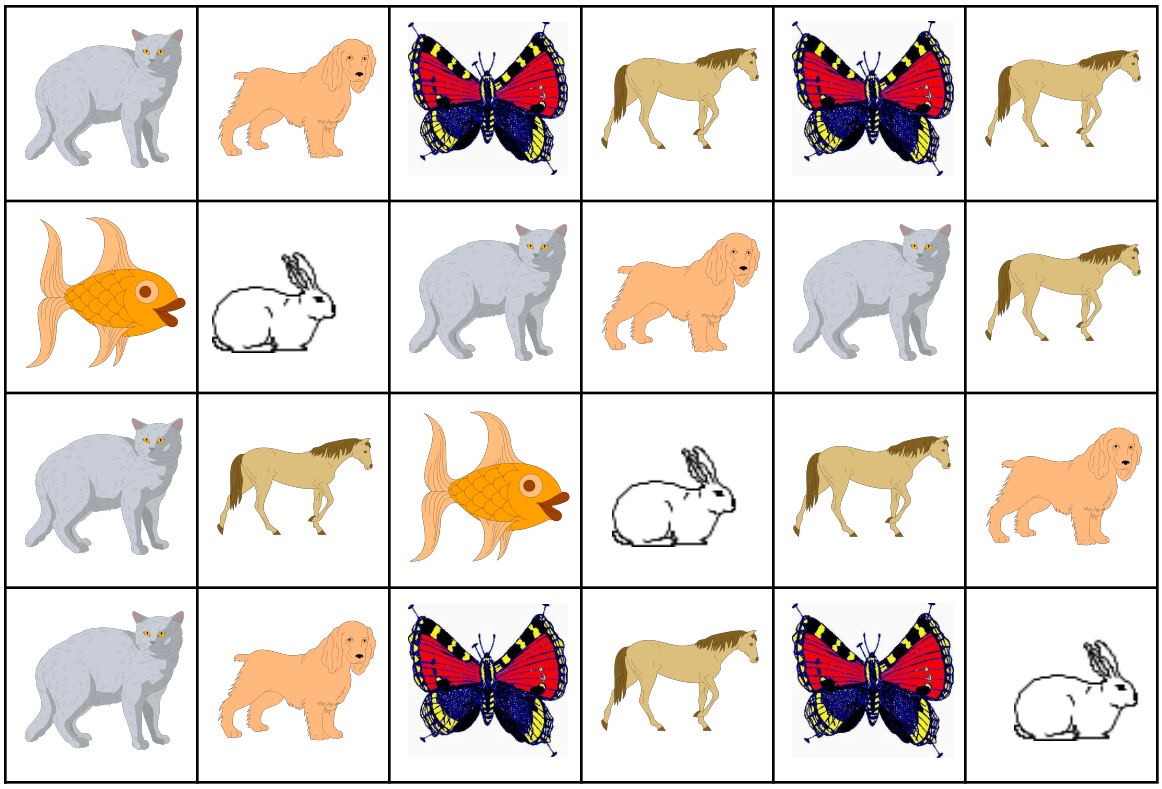
Activity Sheet 5



Activity Sheet-9

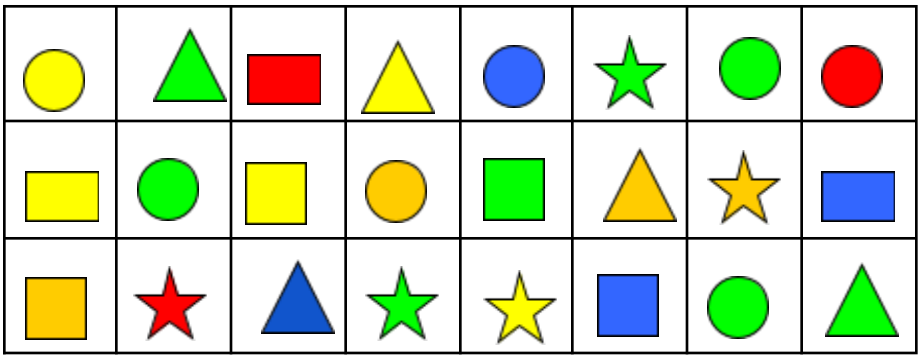


Activity Sheet 11.1

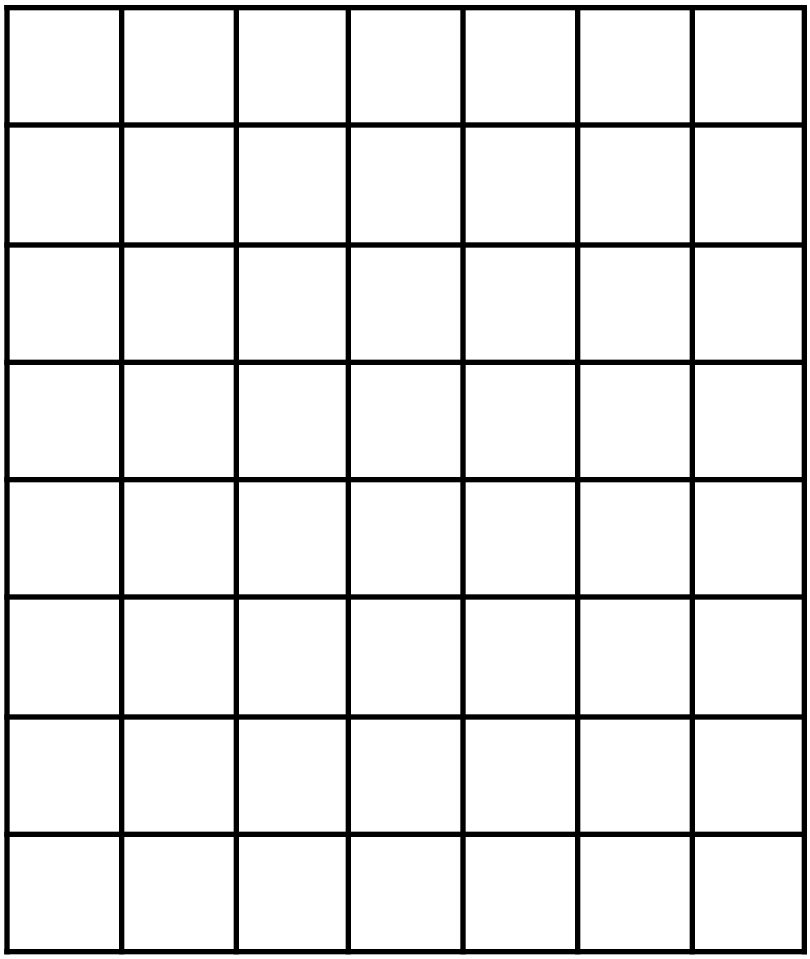


Activity Sheet 11.2

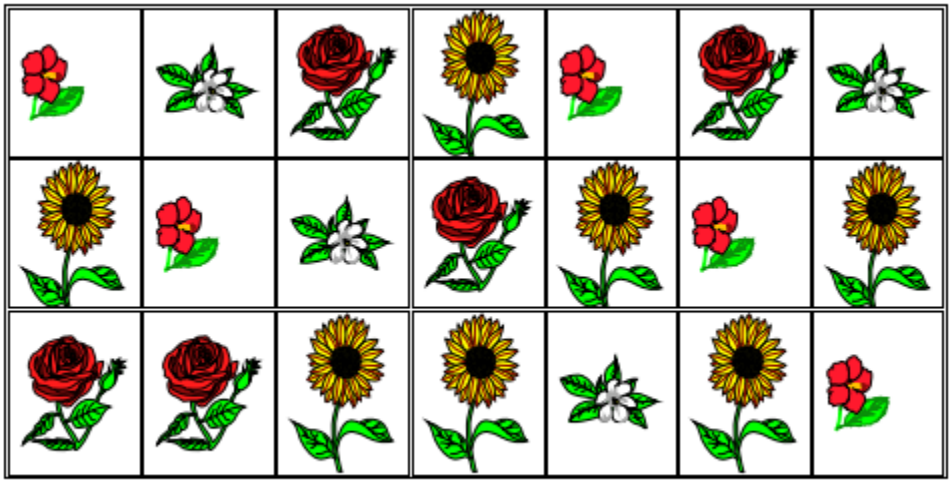
Activity Sheet 11.3



Activity Sheet 11.4



Activity Sheet 11.5



Activity Sheet 11.6

Hisbicus Flowers							
Magnolia Flowers							
Rose Flower							
Sunflower							

APPENDICES

Appendix 1-Hundred Table

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Appendix 2-Addition Table

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	10
2	2	3	4	5	6	7	8	9	10	11
3	3	4	5	6	7	8	9	10	11	12
4	4	5	6	7	8	9	10	11	12	13
5	5	6	7	8	9	10	11	12	13	14
6	6	7	8	9	10	11	12	13	14	15
7	7	8	9	10	11	12	13	14	15	16
8	8	9	10	11	12	13	14	15	16	17
9	9	10	11	12	13	14	15	16	17	18

Appendix 3-Mastery test on addition facts

4 +3 ------	5 +2 ------	5 +6 ------
7 ------	------	------
5 +1 ------	3 +9 ------	9 +4 ------
------	------	------
2 +1 ------	7 +2 ------	5 +8 ------
------	------	------
5 +5 ------	3 +3 ------	2 +4 ------
------	------	------
6 +2 ------	2 +1 ------	7 +3 ------
------	------	------
5 +1 ------	9 +2 ------	3 +6 ------
------	------	------

4	6	8
+9	+7	+6
------	------	------
------	------	------
6	7	6
+4	+8	+9
------	------	------
------	------	------
9	6	5
+9	+6	+7
------	------	------
------	------	------
8	8	8
+4	+9	+8
------	------	------
------	------	------
8	5	5
+3	+9	+3
------	------	------
------	------	------

2	8	7
+2	+0	+7
------	------	------
------	------	------
8	5	2
+2	+0	+3
------	------	------
------	------	------
4	9	4
+4	+1	+7
------	------	------
------	------	------
0	7	4
+0	+9	+5
------	------	------
------	------	------

Appendix 4-Mastery test on subtraction facts

Subtract

7	9	10
- 3	-1	- 4
------	------	------
------	------	------
6	7	12
- 4	- 4	- 3
------	------	------
------	------	------
5	12	10
- 1	- 7	- 3
------	------	------
------	------	------
6	10	9
- 2	- 1	- 3
------	------	------
------	------	------
7	11	13
- 1	- 3	- 5
------	------	------
------	------	------

14 - 5 ------	11 -4 ------	9 -7 ------
------ 15 - 8 ------	------ 12 -6 ------	------ 8 -6 ------
------ 13 - 6 ------	------ 11 -5 ------	------ 7 -2 ------
------ 6 -3 ------	------ 10 -2 ------	------ 9 -0 ------
------ 4 -2 ------	------ 13 - 7 ------	------ 18 -9 ------
------ 8 -4 ------	------ 12 -9 ------	------ 5 -2 ------
------ 9 -2 ------	------ 13 -5 ------	------ 12 -5 ------
------ 15 -9 ------	------ 14 -8 ------	------ 13 -9 ------
------	------	------

15	17	14
- 6	-9	-6
------	------	------
------	------	------
8	16	10
-2	-7	-8
------	------	------
------	------	------
12	7	14
-4	-0	-7
------	------	------
------	------	------
14	13	11
-8	-9	-9
------	------	------
------	------	------
11	9	9
-9	-4	-5
------	------	------
------	------	------
10	5	10
-0	-3	-6
------	------	------
------	------	------
11	11	9
-8	-7	-7
------	------	------
------	------	------

Appendix 5-Multiplication Table

×	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
3	0	3	6	9	12	15	18	21	24	27
4	0	4	8	12	16	20	24	28	32	36
5	0	5	10	15	20	25	30	35	40	45
6	0	6	12	18	24	30	36	42	48	54
7	0	7	14	21	28	35	42	49	56	63
8	0	8	16	24	32	40	48	56	64	72
9	0	9	18	27	36	45	54	63	72	81

Appendix 6-Mastery Test on Multiplication Facts

Multiply

6 × 3 =	8 × 4 =	2 × 6 =
5 × 4 =	7 × 0 =	7 × 5 =
4 × 2 =	6 × 7 =	4 × 7 =
3 × 7 =	5 × 5 =	3 × 4 =
7 × 7 =	4 × 7 =	5 × 6 =
3 × 8 =	3 × 9 =	8 × 6 =
4 × 6 =	5 × 3 =	7 × 9 =

2	4	5
× 7	× 4	× 9
------	------	------
------	------	------
4	5	9
× 9	× 9	× 6
------	------	------
------	------	------
2	2	8
× 8	× 9	× 9
------	------	------
------	------	------
8	2	9
× 5	× 3	× 9
------	------	------
------	------	------

Appendix 7- Make a Multiplication Table